PRACTICE MANAGEMENT™2019
JANUARY 18 – 20 | PARIS LAS VEGAS | LAS VEGAS, NEVADA

PRACTICE MANAGEMENT™ 2019 Meeting Abstracts

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM08
Topic 1:	1.2 Leadership Development
Publishing Title:	A National Survey of Pregnancy and Motherhood in Anesthesiology Training
Author Block:	**H. Thomson**[1], M. B. Kraus[2], A. C. Pearson[3], P. V. Patel[1], S. E. Dodd[4], M. Girardo[1], L. B. Hertzberg[5]; [1]Mayo Clinic, Scottsdale, AZ, [2]Mayo Clinic Hospital, Phoenix, AZ, [3]Iowa City, IA, [4]Rochester, MN, [5]Fresno, CA.
Abstract Body:	**Background:** As the proportion of women entering anesthesiology rises, academic practices are tasked with meeting the different needs of female trainees. Residency and fellowship typically span a woman's main childbearing years, so pregnancy, maternity leave and lactation are critical issues. While literature in other medical specialties addresses the parental experiences of female trainees, few if any studies exist to date in anesthesiology. We created a survey to gather information regarding the mothering experiences of women in anesthesiology on a national scale. **Methods:** In March of 2018, we surveyed the 9,526 female resident, fellow and attending anesthesiologist members of the American Society of Anesthesiologists (ASA) with a web-based survey distributed via email. The survey consisted of questions related to pregnancy, maternity leave, lactation and motherhood. **Results:** The survey response rate was 22%. Of total respondents, 52.6% were pregnant or had a child during training. Some (32.8%) stated that their training program did not have a formal maternity leave policy. Respondents reported a median 7.0 weeks (IQR=5) for maternity leave during training. Participants who felt discouraged from taking additional time off took a median 6.0 weeks (IQR=3) of maternity leave, while women who did not report this took a median 8.0 weeks. Most (52.7%) felt that their maternity leave during training was inadequate. In nearly half of cases (49.5%), women did not meet their desired breastfeeding duration. Inadequate time to pump during work was the most commonly cited reason for ceasing to breastfeed (32%). Trainee mothers

did not have access to a designated lactation space at work in 51.6% of cases. In most cases trainees perceived a negative stigma attached to being pregnant and having children. Trainees often felt discouraged from being pregnant or having children. Respondents were more likely to disagree with the statement “I felt discouraged from being pregnant or having children during training” if more than 40% of their attending staff was female compared to those with less than 40% female staff (62.5% vs 42.6%). Substantial proportions of women felt that work demands adversely affected their childbearing age (47.1%) and desired number of children (40.5%). Of total respondents, 11.6% would counsel a female student against a career in anesthesiology due to obstacles related to motherhood.
Conclusions: Most women who became mothers during anesthesiology training experienced considerable obstacles, including inadequacy of maternity leave, lack of space to express milk at work, and perceived negative stigma towards being pregnant and having children. These data demonstrate the importance of addressing issues related to motherhood in anesthesiology training and academic practice. Improving parental leave, designating workplace lactation space, prioritizing female leadership, and actively creating a supportive culture for healthy pregnancy and motherhood may improve the experiences of women during anesthesiology training and attract more talented physicians to the profession. Progressive leadership in anesthesiology practices could guide changes relating to motherhood and lead to greater satisfaction for physician moms.

Abstract Body2:

We surveyed female members of the American Society of Anesthesiologists about their childbearing experiences during training. Most women who became mothers during training reported considerable obstacles. Creating policies and culture that support healthy pregnancy and motherhood may improve the experiences of anesthesia trainees and attract more talented physicians to the specialty.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM28
Poster Board Number:	03
Topic 1:	1.2 Leadership Development
Publishing Title:	Developing the Department of Anesthesiology as a Cost-Savings Leader Through a Smoking Cessation Program in an Outpatient Chronic Pain Clinic
Author Block:	**N. Shah**[1], S. E. Jarquin[2], A. G. Gillman[3], A. D. Wasan[4], T. D. Emerick[5]; [1]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Department of Psychology, University of Pittsburgh Medical Center, Pittsburgh, PA, [3]Center for Neuroscience, University of Pittsburgh Medical Center, Pittsburgh, PA, [4]UPMC Pain Medicine At Centre Commons, Pittsburgh, PA, [5]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Mars, PA.
Abstract Body:	**Introduction:** Cigarette smoking is the single greatest cause of morbidity and mortality in the United States[1]. Previous cross-sectional studies have found that smokers experience greater pain intensity than nonsmokers, especially among patients with cancer[2,3]. There have been limited prospective studies analyzing the effects of smoking cessation on chronic pain. The exact correlation between smoking and pain is unknown, but it is theorized that the relationship is bidirectional. Along with social, biological and physiological factors, pain and smoking exacerbate one another and result in a positive feedback loop of more pain and increased smoking rates[4]. Furthermore, smoking has also been shown to promote the transition from acute to chronic pain[5]. Existing literature suggests that smokers who reduced the number of cigarettes reported having less pain[6]. In collaboration with a pain medicine specialist and pain psychologist at our healthcare center, we developed an eight-session group-based intervention for chronic pain patients who are motivated to quit smoking. The aim was to assess whether patients who successfully quit smoking had a reduction in pain and improvement in physical and emotional health. **Methods:** After IRB approval (#PRO16020281), a six-week outpatient smoking cessation program consisting of eight group sessions was created at a large academic medical center's Department of Anesthesiology. A chronic pain trained-anesthesiologist and a pain psychologist within the department led the sessions. New and returning patients to the pain medicine clinic who identified as smokers during standard clinic visits were asked to fill out a Readiness to Quit ladder form. Those who scored greater than 7 points were mailed an invitation letter by clinic staff. **Intervention:** Each session consisted of informational discussions on topics related to smoking cessation and quitting strategies. The first session focused on

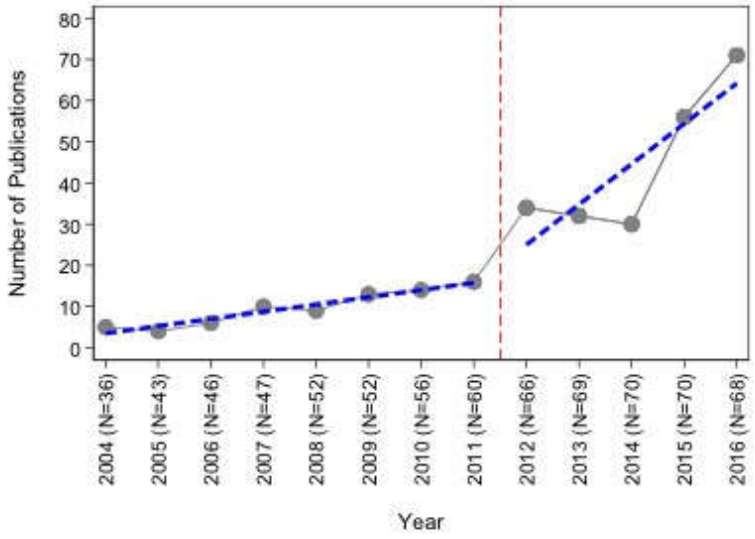
Abstract Body2:

nicotine replacement therapies and assessing baseline smoking history and pain severity. Sessions 2-4 addressed self-management techniques for smoking triggers, lifestyle changes, and coping with high risk smoking situations. The targeted smoking quit day was by session 5. Session 6-8 involved discussions regarding ongoing quitting experiences. Participants were given multiple surveys each week to track their progress with smoking cessation and assess pain levels. Follow-up assessments were completed at regular clinic visits. **Discussion:** Smoking related illness in the United States costs more than $300 billion each year, including $170 billion for direct medical care and $156 billion in lost productivity[1,7]. Smoking cessation programs cost little compared to other commonly covered services by insurance. Previous studies have demonstrated that a comprehensive cessation benefit typically costs less than $0.50 per member per month. Costs per program can range from a few hundred to few thousand dollars[8]. Our program showed how a chronic pain clinic could successfully structure a smoking cessation program to provide cost-effective interventions for pain management. This program provided patients with coping strategies and providers with another mode to manage chronic pain. Smoking cessation programs led by pain medicine physicians and pain psychologists can lead to large healthcare savings for the hospital network as well as health plans. With the ever-increasing focus on improved quality of care and increased productivity, this model is a holistic strategy to manage chronic pain in an era of the opioid crisis.

Development of a smoking cessation program in an outpatient chronic pain clinic can allow anesthesiology departments to become cost-saving leaders for their hospital networks and insurance companies. Chronic pain and smoking have a bi-directional relationship indicating that smoking cessation can be a potential method to treat patients with chronic pain. In addition to achieving improved pain control, smoking cessation can lead to a decrease in other smoking related illnesses that can decrease healthcare costs significantly.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM16
Poster Board Number:	01
Topic 1:	1.2 Leadership Development
Publishing Title:	Creating Leaders through a Mentoring Program and Faculty Academic Productivity: A 13 year Assessment
Author Block:	**E. Rebello**[1], L. Gann[2], J. R. Ruiz[1], A. Zavala[1], P. Owusu-Agyemang[1], M. Hernandez[2], T. F. Rahlfs[1]; [1]Anesthesiology and Perioperative Medicine, University of Texas MD Anderson Cancer Center, Houston, TX, [2]University of Texas MD Anderson Cancer Center, Houston, TX.
Abstract Body:	I**ntroduction**: Mentoring in medicine fosters leadership skills and contributes to the growth of academic departments by improving research productivity and career satisfaction. [1-2] The University of Texas MD Anderson Cancer Center Department of Anesthesiology initiated a faculty mentoring program in 2012. One component of the mentoring program consisted of having faculty select their mentors through a speed mentoring process rather than having them assigned as an effort to cultivate a mentee-driven ongoing mentoring relationship. The purpose of this study was to measure faculty academic productivity over 13 years as defined by number of publications and examine the impact of these ongoing mentoring relationships since the commencement of the faculty mentoring program. **Methods:** A literature search was conducted and faculty contributed publications identified through PubMed, Scopus, and Web of Science were included in this study. Both the number of unique publications for a given year, and the relative frequency of publications accounting for the number of faculty in the department during each corresponding year were examined. Piecewise linear regression was used to estimate and compare the change in the frequency of publications corresponding to each of the two specific time periods: "prior to formal mentoring partnerships" (2004 to 2011) and "with mentoring partnerships" (2012 to 2016). All analyses were conducted using Stata v15. **Results:** The piecewise linear regression was applied by partitioning years 2004 - 2011 to create the first partition, and the subsequent years 2012 - 2016 to create the second partition. The linear model fitted to the first partition estimated the frequency of publications just prior to 2012 to be 17.5 (P-value = 0.006). The corresponding slope coefficient of 1.75 (P-value = 0.107) indicated an average increase of 1.75 publications per year.

The linear model fitted to the second partition estimated the frequency of publications for 2012 to be 25 (P-value = 0.001). The slope coefficient of 9.8 (P-value = 0.001) indicated an average increase of 9.8 publications per year illustrating an increase over 5-fold (9.8/1.75) in the publication rate during 2012 to 2016 illustrating a statistically significant difference between slopes during two time spans (P-value = 0.006).
The faculty size increased steadily throughout 2004 to 2016 and was significantly associated with the yearly increase in the frequency of publications. On average the number of publication increased 2.8 times per year (P-value < 0.001). After adjusting for faculty size by utilizing the relative frequency of publications the difference between slopes from the two partitions remained statistically significant (P-value = 0.010).
The wide variability in publications from 2012 to 2016 imparted from the drop in publications during 2014 may be attributed to budgetary issues and reduced non clinical time during that year.
Conclusion: The increasing trend in publications from 2012 appears promising. If maintained, faculty mentoring has the potential to increase faculty academic productivity and provide professional development both in increasing depth of expertise and subsequently in fostering leadership in these niche research areas.
Refe**rences:**1. Flexman A, Gelb A. *Mentorship in Anesthesia.* Current Opinion in Anesthesiology 2011, 24: 676-681.2. Flexman A, Gelb AW. *Mentorship in Anesthesia: How Little We Know.* Canadian J Anaesth. 2012 Mar; 59 (3): 241-5
Figure 1: Piecewise linear model fitted to two time spans



Abstract Body2: Mentoring has the potential to increase faculty academic productivity and develop faculty both in expertise and in leadership.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM01
Poster Board Number:	
Topic 1:	1.1 Quality Improvement
Publishing Title:	A Single Center Quality Improvement Evaluation of Disposable Versus Reusable Laryngoscopes for Out-of-Operating Room Intubations: A Cost and Clinical Analysis
Author Block:	**J. Williams**, C. G. Simmons, M. Iacovetto, J. Brainard; Department of Anesthesiology, University of Colorado, School of Medicine, Aurora, CO.

Abstract Body:

Introduction

Utilization of disposable versus reusable laryngoscopes is driven by numerous factors including cost, regulatory compliance, convenience, infection control, and environmental impact. Clinician preferences, skepticism and change management are important considerations when implementing new airway management equipment. We undertook a comprehensive analysis to evaluate utilization of disposable laryngoscopes for "out-of-OR" (OoOR) settings (ICU & ED, ~980 intubations per year in all) where other factors (patient safety, lost inventory, lower volume, efficiency in emergent intubations) may present a more favorable argument for disposable laryngoscopes.

Methods

For clinical evaluation (based on currently approved equipment in our health system) manufacturers provided four different disposable laryngoscope blade/handle setups (Teleflex Rusch® TruLite Secure™; Teleflex Rusch® DispoLED™ /Green Rusch Lite™; Flexicare BriteBlade Pro™ / BritePro™ Solo; Storz Laryngobloc). Only Macintosh 3 blades were used for standardization. 30 trials of each disposable setup were conducted (n = 120). Laryngoscopes were trialed in the OR setting by experienced providers (Faculty & Resident Anesthesiologists, AAs, CRNAs). Immediately following direct laryngoscopy, providers completed a 6-question Likert-scale/open-ended survey. Attempts were made to have the same providers trial all 4 laryngoscopes. Survey results were analyzed with descriptive statistics and one-way ANOVA with *post-hoc* Tukey HSD analyses were conducted to pinpoint categorical differences among laryngoscopes. Significance was set at a p-value of < 0.05 for all analyses. Summary comments were compiled. 5-year cost projections were modeled using Microsoft Excel®.

Results

Cost analysis—which factored in sterilization/processing costs for reusable

equipment as well as replacement of lost and worn inventory—showed a sizeable 5-year cost-savings ($117,000-211,000) with all disposable compared to reusable devices (Fig. 1). Sensitivity analysis revealed reusable laryngoscopes became cost-effective at a volume of ~6,600 OoOR annual intubations per year.

For clinical evaluation, significant differences were found between disposable laryngoscopes in all categories except sturdiness and rigidity (Table 1). Based on *post-hoc* analysis, the TruLite Secure model emerged superior in multiple categories compared to some but not all disposable laryngoscopes. Open-ended feedback revealed a variety of opinions and equipment-related issues.

Discussion

This study highlights the efficacy and importance of gathering comparative clinical feedback to inform capital expenditure planning. Vetting of equipment identified issues with packaging and functionality, which helped reach an individualized, institution-specific decision on standardization of airway equipment for OoOR use. Moreover, this study identifies a cost-effective role for disposable laryngoscopes for OoOR use, and, although this is one institution's experience (not a specific endorsement of any one device), it can serve as a springboard for other institutions evaluating these leading disposable laryngoscopes in the market.

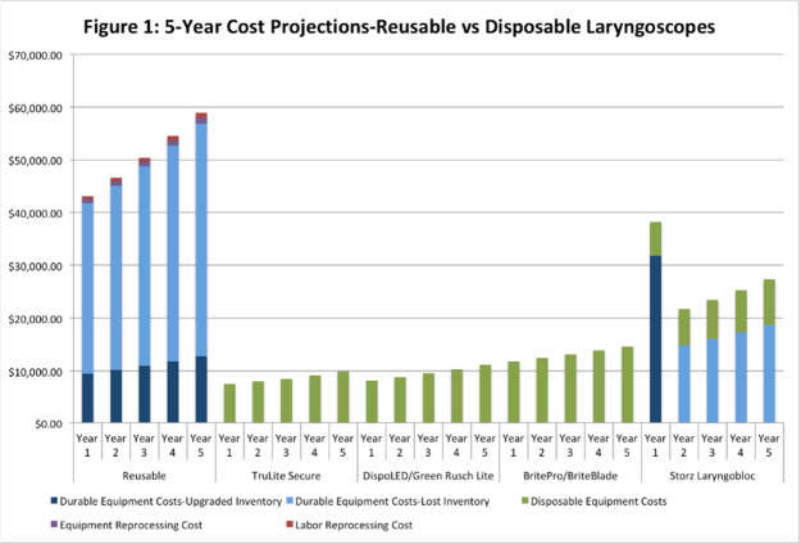


Table 1: Statistical Analysis

Average Ratings of Disposable Laryngoscopes By Category (5-point Likert-type scale scoring)

	Disposable Laryngoscope			
Category	**TruLite Secure**	**DispoLED/Green Rusch Light**	**BritePro/BriteBlade**	**Storz Laryngobloc**
Packaging & Assembly	4.57	4.07	3.87	3.80
Illumination & Airway Visualization	4.50	4.13	3.83	4.43
Comfort & Ease-of-use	4.47	4.10	4.30	3.70
Sturdiness or rigidity	4.13	3.77	4.07	3.83
Overall Rating	4.40	3.83	3.97	3.67

One-Way ANOVA Analysis of Disposable Laryngoscope Characteristics

Category	p-value
Packaging & Assembly	**0.002**
Illumination & Airway Visualization	**0.016**
Comfort & Ease-of-use	**0.003**
Sturdiness or rigidity	0.393
Overall Rating	**0.022**

**Bolded values are statistically significant*

Significant Results of *post-hoc* Tukey HSD Analysis

Category	Comparison			p-value
Packaging & Assembly	BritePro/BriteBlade	vs	TruLite Secure	**0.008**
	Storz Laryngobloc	vs	TruLite Secure	**0.003**
Illumination & Airway Visualization	BritePro/BriteBlad	vs	TruLite Secure	**0.021**
	BritePro/BriteBlade	vs	Storz Laryngobloc	**0.047**
Comfort & Ease-of-use	BritePro/BriteBlade	vs	Storz Laryngobloc	**0.026**
	Storz Laryngobloc	vs	TruLite Secure	**0.002**
Sturdiness or rigidity	*No significant difference between laryngoscopes based on One-Way ANOVA*			N/A
Overall Rating	Storz Laryngobloc	vs	TruLite Secure	**0.017**

**Bolded values are statistically significant*

Abstract Body2:

The implementation of disposable laryngoscopes into clinical practice is an intricate and multifactorial process. Based on our institution's clinical and cost analysis, we identified a cost-effective role for fully disposable laryngoscopes (5-year cost-savings upwards of $211,000 compared to reusable devices) for out-of-OR use and we have provided a basis for evaluating leading disposable laryngoscopes in the marketplace.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM03
Poster Board Number:	
Topic 1:	1.3 Challenging Cases and their Innovative Solutions in Practice Management
Publishing Title:	A Pilot Analysis of the 'Gray Zone' Unit: A New PACU Model of Care for High Risk ENT Surgical Patients
Author Block:	**B. Albers**[1], A. Sawardekar[2], N. Jagannathan[3]; [1]Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, [2]Lurie Children's Hosp of Chicago, Chicago, IL, [3]Wilmette, IL.

Abstract Body:

Introduction: We have identified several high-risk otolaryngology (ENT) patients that require ICU for a brief period of time post-surgery (<24 hours). Given the lack of a “Stepdown Unit” at our institution, we have developed and implemented a pilot of a new PACU Phase 1 Observation Unit (the Gray Zone Unit (GZU) as an alternative location for immediate and efficient postoperative care for these patients. The initial goals included identifying ENT patients that required an increased level of care for a short period of time, developing the workflow and staffing requirements, and provision of various respiratory support/resources for these patients. The Gray Zone Unit would function similarly to the PICU.

Methods: The pilot was initiated July 2017 with the maximum of two patients per day. Patients that meet Gray Zone criteria include high risk adenotonsillectomy patients and complex ENT cases without significant co-morbidity as outlined below in Table 1. Patients are designated a Gray Zone disposition by ENT surgical attending preoperatively, and monitored with 1:1 nursing staff for up to 6 hours until their postoperative destination is determined. Depending on the clinical scenario, patients were discharged from GZU to PICU, an inpatient floor, 23 hr. extended recovery, or home. The PACU Phase 1 Unit was staffed by an otolaryngologist and an anesthesiologist. The success criteria of the pilot, included less than 5% reintubation rate in the PACU, overall reduction of admission to ICU and cancelled ICU beds, and decreased number of ICU denials from ENT service. The failure criteria included any code, and/or any event that results in patient harm.

Results: For FY2018, a total of 209 patients were designated as Gray Zone Patients. The disposition of these patients was 3.8% to PICU, 17.2% to 23hr extended recovery, and 79% met criteria for discharge home. Analysis showed a decreased number of cancelled PICU beds, and therefore, an increased number of PICU beds available for other critically ill patients.

Discussion: To date, implementation of this PACU care model appears to have reduced the total amount of ENT patients admitted to the PICU from the OR.

Abstract Body2:

This Gray Zone unit appears to be a feasible model of care for post-ENT surgical patients who require intensive care for a brief period of time. Data analysis and utilization of this model is ongoing with the hopes to increase patient capacity and expand to other surgical services.
Cost Analysis: Capital expenditures to implement the program included the following:2 X LTV 1200 ventilators $27k (rent $500/month)2 X V60 PPV $30K (rent $400/month)2 X HFNC $2.4K over 6 monthsVoalte Phone for ENT SOW $2.1KExpense:One-off Training for RNs $3.5K
Expected Benefits:$3900 contribution margin x 2.1 average length of stay x 201 patients turned away from the PICU = cost savings of $1.64 million
Certain high-risk ENT patients require ICU-care for a short period of time post surgery. With the lack of a step-down unit at our institution, we developed a new PACU unit as an alternative location for the immediate and efficient postoperative care for these patients, resulting in significant cost savings to the institution.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM04
Poster Board Number:	
Topic 1:	1.3 Challenging Cases and their Innovative Solutions in Practice Management
Publishing Title:	CRNA Absences Exceed Those of Residents or Faculty
Author Block:	**E. Bowe**[1], K. A. Findley[2], B. C. Sindelar[3]; [1]Anesthesiology, Univerity of Kentucky, Lexington, KY, [2]Anesthesiology, UK Medical Center, Lexington, KY, [3]Anesthesiology, University of Kentucky, Lexington, KY.
Abstract Body:	INTRODUCTION Our impression was that a significant difference existed in the frequency of unanticipated absences between members of different groups of anesthesia providers (anesthesiologists, anesthesia residents, and Certified Registered Nurse Anesthetists, [CRNAs]). We undertook an analysis of unanticipated absences for these three groups of providers. METHODS Data regarding unanticipated absences were obtained from a whiteboard ("the board") listing available anesthesia providers and updated every morning by the "floor runner." These data were input into a scheduling program ("the program") which tracks assignments of anesthesiologists, residents, and CRNAs. Using this approach scheduled Family Medical Leave (eg, maternity leave) was not counted as an unanticipated absence. Data from the program were analyzed for the period of July 1, 2017 through June 30, 2018 to determine the number of days of unanticipated absences for all anesthesiologists, residents, and CRNAs. Full Time Equivalents (FTEs) were determined for each group of providers. During the period studied a significant number of CRNAs and anesthesiologists were added to the department in anticipation of opening additional anesthetizing locations beginning in July, 2018. This resulted in several positions being filled for less than 12 months. Anesthesiologist and CRNA FTEs were calculated based on the start date of the newly hired individuals. Further, the University of Kentucky allows faculty members, but not CRNAs, to be appointed for 12 months, 11 months, 10 months, or 9 months and still be considered a full time employee. Some anesthesiologists have opted for less than a 12 month appointment, so FTEs for faculty members were also adjusted based on appointment intervals (eg, an anesthesiologist who had a 10/12ths appointment for the entire period was considered to be 0.83 FTE and an anesthesiologist who had a 12/12ths appointment beginning on April 1 was considered to be a 0.25 FTE). Since the

academic year was used, all residents were present for the entire 12 months.

RESULTS

Data are presented in the table.

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	Number of FTEs	Total Unanticipated Absences	Mean Unanticipated Absences/FTE
Anesthesiologists	46.9	42	0.9 ± 1.6
Residents	61	9	0.2 ± 0.4
CRNAs	46.2	208	4.5 ± 3.6

A one-way analysis of variance between groups of providers was conducted to compare the number of unanticipated absence days per FTE. There was a significant difference between groups at the $p < 0.01$ level [$F(2,147) = 52.2$, $p = 0.000000000000000005$]. Post hoc comparisons using the Bonferroni adjusted alpha levels of 0.003 (0.01/3) indicated that the mean number of sick days was significantly greater for CRNAs (Mean = 4.5 ± 3.6) than for faculty (Mean = 0.9 ± 1.6) and for residents (Mean = 0.2 ± 0.4). Also, the mean number of sick days for faculty (Mean = 0.9 ± 1.6) was significantly greater than for residents (Mean = 0.2 ± 0.4).

DISCUSSION

From the perspective of a hospital, one of the most important criteria for success of an anesthesia practice is the ability to provide services at an agreed-upon number of anesthetizing locations. Closing an operating room due to illness of an anesthesia provider results in inconvenience to patients and the potential for lost revenue (if the patient subsequently does not have the procedure or schedules the procedure in a competing facility) or increased cost (if the procedure is delayed and performed outside of normal hours necessitating the use of on-call personnel). It may be necessary to staff one or more additional CRNAs per day to ensure sufficient numbers of providers to cover all anesthetizing locations. In our institution it costs over $300,000 per year to have one additional CRNA every day to compensate for unanticipated absences

Abstract Body2:

In our department CRNAs are much more likely to call in sick than anesthesiologists or residents. It costs in excess of $300,000 annually to have one additional CRNA available every day to compensate for unanticipated absences.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM11
Poster Board Number:	03
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Does Anesthesia-Specific Training Decrease Patient Interview Times?
Author Block:	**M. Romej**, G. Lynde; Emory University Hospital, Atlanta, GA.

Abstract Body:

Background:

A thorough preoperative assessment of the surgical patient is an important portion of a patient's care. The preoperative clinic has been shown to increase patient satisfaction, reduce unwarranted testing, decrease surgical cancellations, and reduce in-hospital mortality. [1-3] While there is a demonstrable benefit to the outpatient preoperative assessment of patients, the clinic structure is not standard. [4-5] In our clinic, patients are seen by either a nurse practitioner (NP), certified anesthesiologist assistant (AA), or anesthesiology resident. All patients are reviewed with an attending anesthesiologist. Is there a difference in clinic times based on who sees the patient?

Methods:

The Anesthesiology Perioperative Clinic (APC) at Emory University Hospital employs three full-time NPs. One CA-3 resident rotates through clinic for two weeks. AAs fill in for NP vacations/sick leave. Using the clinic's Cerner tracking board, we tracked the time the NP/AA/resident entered and left the patient's exam room between August - October 2018. During this time six CA-3 residents rotated through the clinic. Six AAs covered NP vacations.

Results:

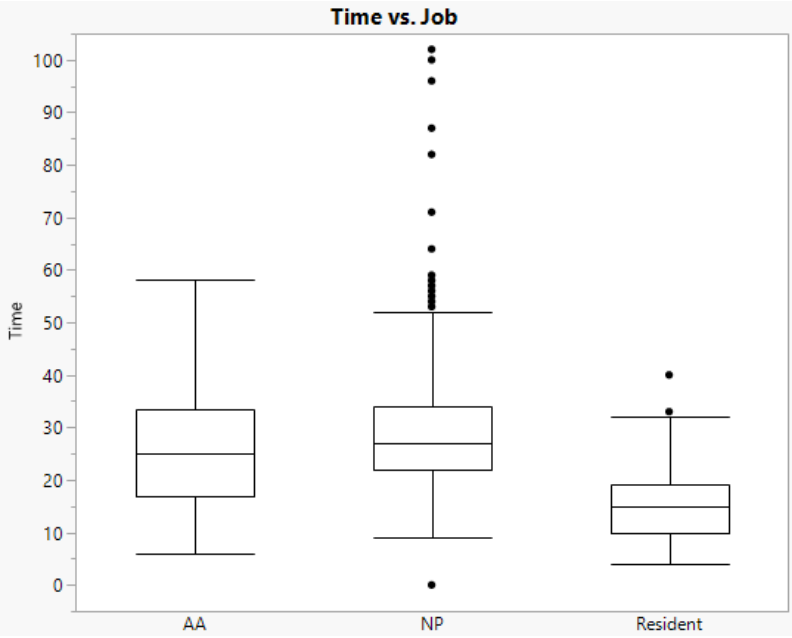
Over the three-month period, a total of 1454 patients were seen by either an NP, AA, or resident. NPs saw 962 patients, AAs saw 113 patients, and residents saw 379 patients. The average patient interview was 27 minutes. The average time spent by the NPs, AAs, and residents were 29 minutes 2 seconds, 26 minutes 25 seconds, and 16 minutes 1 second respectively. (See Fig. 1). The standard deviation for NPs, AAs, and residents were 4 minutes, 2 minutes, and 6 minutes respectively. There was a statistically significant difference between the three groups ($p<0.001$).

Conclusions:

Having specific anesthesia training shortened patient interview times as demonstrated by the decreased times for the residents vs AAs vs the NPs. Therefore it may be possible to increase patient throughput by staffing clinics with

anesthesia-trained providers. There may also be a benefit to being regularly scheduled in clinic. Since the AAs were covering for NP absences, all six AAs were new to clinic. This may account for the variability among the AAs.

References:
1. Hepner DL, Bader AM, Hurwitz S, Gustafson M, Tsen LC: Patient satisfaction with preoperative assessment in a preoperative assessment testing clinic. Anesth Analg 2004; 98:1099-105
2. Tsen LC, Segal S, Pothier M, Hartley LH, Bader AM: The effect of alterations in a preoperative assessment clinic on reducing the number and improving the yield of cardiology consultations. Anesth Analg 2002; 95:1563-8
3. Blitz JD, Kendale SM, Jain SK, Cuff GE, Kim JT: Preoperative Evaluation Clinic Visit Is Associated with Decreased Risk of In-hospital Postoperative Mortality. Anesthesiology 2017; 125: 280-294
4. Fischer SP: Development and effectiveness of an anesthesia preoperative evaluation clinic in a teaching hospital. Anesthesiology 1996; 85:196-206
5. Bader AM, Sweitzer BJ, Kumar A: Nuts and bolts of preoperative clinics: The view from three institutions. Cleveland Clinic Journal of Medicine 2009; 76: S102-111



Abstract Body2:

We compared three types of providers staffing an anesthesia preoperative clinic to determine if there was a difference in patient interview times based on anesthesia-specific training.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM02
Poster Board Number:	
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Effects on Operating Room Costs Due to Inefficient Scheduling
Author Block:	**N. Shah**, S. J. Straesser, S. M. Littwin; Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA.
Abstract Body:	**Introduction:** Operating Rooms (ORs) are a significant source of revenue generation for hospitals. Efficient use of OR time is crucial to limiting costs and maximizing profit. OR efficiency is multifactorial and includes: case scheduling, staff allocation, operative time, and turnover time. Recently, surgeons have adopted the concept of "room flipping". In this model, a surgeon simultaneously schedules cases in two ORs with the intent of increasing efficiency and revenue. However, this model can lead to gaps, or downtime, between cases; this leads to decreased OR utilization and profitability[1]. At our academic institution, we assessed the increased cost of staffing created by this scheduling model. **Methods:** Scheduling data for a surgeon who schedules cases simultaneously in two ORs once per week was analyzed from January - June 2018. Data was collected on scheduled surgery start, patient in room/out room, surgery start/end times and cost per OR hour for staff members. From the data, case length, turnover time, gap time, and overtime was derived. Gap time was calculated by subtracting 25 minutes (the minimum turnover time) from the total turnover time. Overtime was determined by the difference between scheduled block end time and patient out time. **Results:** The total gap time and overtime for all cases was 1837 minutes and 1127 minutes respectively (Table 1). Cost per OR minute was $10.13 and increased to $11.63 during overtime period. Based on this data, total cost of gap time and overtime was $31,725.70 over the study period or $97,043.32 per year (Table 1). Average case length was 166 minutes and there were on average 4 cases/day. In order to perform all cases in one OR including normal gap time, it would take 13.3 hours and would cost $8,512.00/week to staff it for 14 hours. In contrast, cost of staffing for two ORs with downtime is $12,810.22/week. There would be projected cost savings of $4,298.22/week or $223,507.32/year with one OR (Table 2). **Discussion:** According to the results, scheduling cases in two ORs simultaneously leads to inefficient use of OR time and staff. In addition to the cost of the OR staff, there are other costs encountered by the hospital system that make OR downtime further expensive. This study did not evaluate the feasibility of a

surgeon to operate in a longer OR block time and whether such changes would affect hospitals' ability to retain surgeons. Nonetheless, these results suggest that the hospital bears significant cost burden due to OR downtime in the "room flipping" model that is thought to lead to increased efficiency and revenue. In addition, utilization of anesthesiologists and CRNAs must be considered based on the ability to generate income only during periods of time that surgery is taking place.

Cost of staffing two rooms currently (7a-3p and 7a-5p) with Downtime	$12,810.22
Cost of staffing one room from 7a - 9p	$8,512.00
Cost Savings if only 1 OR Used	$4,298.22
Yearly Cost Savings	$223,507.32

Table 2: Cost savings analysis if downtime is eliminated

Total Gap Time (mins)*	Total Overtime (mins)	Cost of Gap Time	Cost of Overtime	Total Cost of Downtime (Gap time + Overtime)	Total additional cost/week due to Downtime	Staffing costs during Downtime per year
1837	1127	$18,614.93	$13,110.77	$31,725.70	$1,866.22	$97,043.32

*Gap Time = Total turnover time >25 minutes (average turnover time at hospital)
Data above is cumulative from Jan to Jun 2018

Table 1: Cost analysis of downtime created by inefficiency in scheudling

Abstract Body2:

Operating Rooms (ORs) are a significant source of revenue generation for hospitals. Efficient use of OR time is crucial to limiting costs and maximizing profit. OR efficiency is multifactorial and includes: case scheduling, staff allocation, operative time, and turnover time. Recently, surgeons have started to schedule cases simultaneously in two or more ORs in order to increase efficiency and revenue. Our institution analyzed the added cost of this scheduling system by evaluating the inefficiencies created in terms of increased downtime of ORs and overtime paid to staff members. When this scheduling system is not carried out efficiently, the hospital system experiences a significant increase in healthcare delivery costs.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM15
Poster Board Number:	03
Topic 1:	1.1 Quality Improvement
Publishing Title:	Drugs and Dollars: A needs-analysis for a central resource containing operating room drug costs
Author Block:	**N. Khatri**[1], P. P. McNaull[2]; [1]Department of Anesthesiology, University of North Carolina Hospitals, Chapel Hill, NC, [2]Chapel Hill, NC.
Abstract Body:	**Background** There is a significant variation in total cost of intravenous (IV) drugs administered in the operating room (OR) for many different surgical procedures at UNC Hospitals. Prior studies have associated a lack of accessibility to drug costs to increased variation in utilization costs. Unfortunately, there is no easily accessible central resource containing the cost of IV drugs administered by anesthesia providers at our institution. As such, anesthesia providers are unaware of the cost of the medications they are choosing to administer intra-operatively. The purpose of this study is to conduct a needs-analysis of such a central resource and whether the existence of such a resource would make an impact in reducing cost of anesthetic care in the operating room. **Methods** A needs-analysis survey about OR drug prices was sent electronically via Qualtrics to all anesthesia providers within our department to determine the need for this central resource. The pre-survey consisted of questions regarding self-perception of knowledge of drug costs, questions asking participants to estimate the cost of total drugs used for a specific laparoscopic cholecystectomy, pulmonary wedge resection, and craniotomy for stereotactic posterior fossa mass removal. This survey was followed by a 4-minute educational video about the cost of commonly used medications within the OR as well as the wide range of costs of the aforementioned surgical procedures. Finally, a post-survey containing 6 questions was completed by survey participants re-evaluating their self-perceived knowledge of drug costs as well as their desire for a central resource. **Results** A total of 224 surveys were distributed of which 55 (25%) were completed. Of those who answered our survey, the majority stated they had never received formal education on OR drug prices during their training. Only 8% of respondents estimated the cost of medications for laparoscopic cholecystectomy correctly, 6% for pulmonary wedge resection, and 0% for craniotomy. When

comparing the pre-survey and post-survey answers, respondents felt significantly more knowledgeable about OR drug costs after watching the educational video (p=0.001). Furthermore, after watching the video, a significantly increased number of respondents believed there was a wide variation in the cost of anesthesia administered for any given surgical procedure (p=0.001). The majority of respondents stated they would like a central resource containing OR drug costs in the form of a mobile phone application or website and that they believe it would allow them to care for patients in a more cost-effective manner while maintaining patient safety.

Conclusion

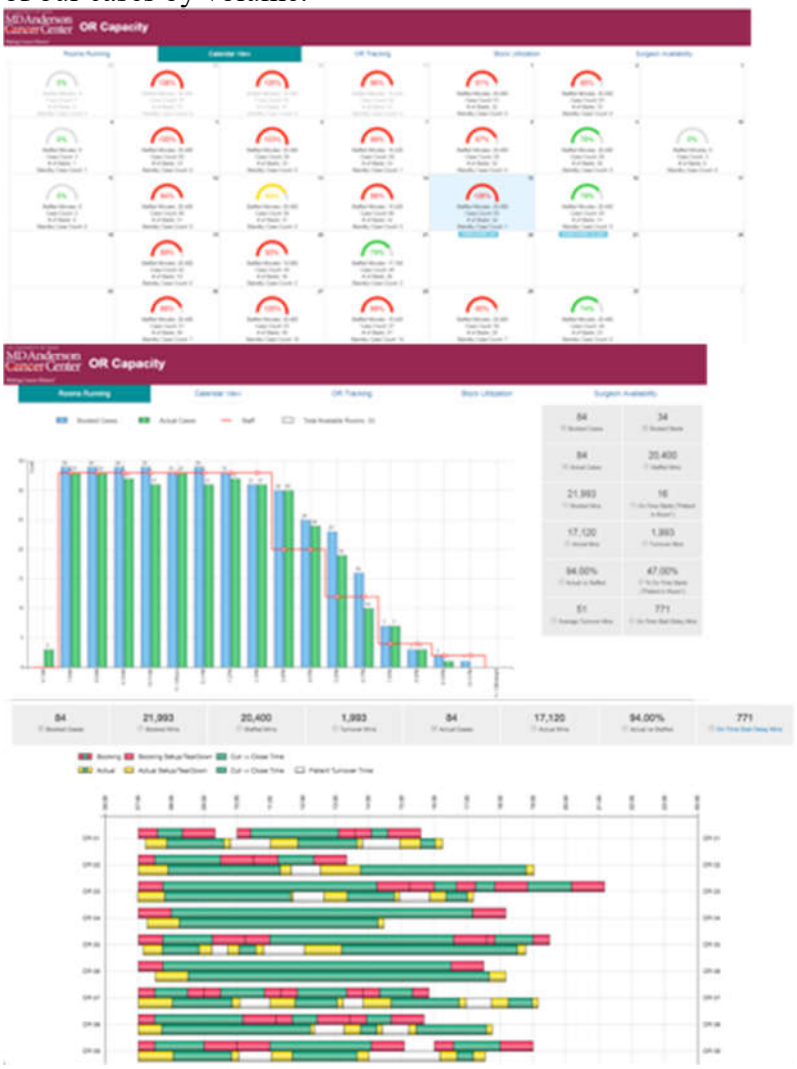
There is a wide variation in the cost of IV drugs used for anesthetic management of patients at UNC Hospitals. This may, in part, be due to a lack of knowledge of the cost of various IV drugs administered by anesthesia providers, as evidenced by the fact that the majority of respondents answered inaccurately about the cost of the surgeries in the examples. There exists a need and desire amongst anesthesia providers for a central resource outlining cost of IV medications, particularly in the form of a mobile phone application or website. Limitations of this needs-analysis was that it looked only at IV drug costs and did not evaluate inhaled anesthetics as well as local anesthetics used in peripheral nerve blocks.

Abstract Body2:

There is a wide variation in the cost of IV drugs used for anesthetic management of patients at UNC Hospitals. Our study has shown that this may be due, in part, to a lack of knowledge of the cost of various IV drugs on the part of anesthesia providers. We propose that making drug costs available to providers, via a mobile phone application or website, may help reduce operating room drug costs.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM12
Poster Board Number:	04
Topic 1:	1.3 Challenging Cases and their Innovative Solutions in Practice Management
Publishing Title:	Operating Room Capacity Tool for Clinical Operations Management
Author Block:	**J. Soliz**, K. Shook, K. Brammer, C. Owen, B. Benjamin, T. F. Rahlfs; U.T. MD Anderson Cancer Center, Houston, TX.
Abstract Body:	**Introduction:** Real-time operations data is imperative for decision support when managing the periop arena, contributing to optimized efficiency in resource utilization for the operating rooms (OR). Our comprehensive cancer center developed the OR Capacity Tool to provide oversight and management of OR blocks. **Methods:** Rapid growth of our surgical caseload along with a larger OR suite required an IT solution to assist in the management of the increasingly complex block utilization and space resources. The OR Capacity tool was developed to provide real time, up to the minute data to support operations management. The system was designed to track and analyze the number of booked OR starts, percent OR utilization, and block utilization. The OR Capacity tool tracks on time starts, turnover times, and delay codes. **Results:** Figure 1 shows the OR Capacity Tool's default screen, a monthly calendar view of booked capacity as a percentage of staffed time. The calendars show daily case counts and the number of standby cases. The graphical display is color coded relative to how the ORs are booked relative to capacity. Figure 2 shows the Rooms Running graphical report indicating the expected number of rooms running in two hour increments throughout the day (blue) as well as the actual rooms that ran in each of those two hour increments (green). The red line shows the capacity for the ORs based on available staffing for that day. The dashboard on the right side of the screen displays metrics for that day's running. Figure 3 shows the OR Tracking function indicating in graphical format the scheduled cases in each operating room along with real-time minute by minute data. Included are pertinent efficiency metrics for on time starts and turnover times. Imbedded within the display are delay codes for those cases with unexpected delays. **Discussion:** The OR Capacity tool provides essential data to effectively manage operating

rooms and has evolved to include expansion of the number of ORs, providing data for increased staffing. Block utilization data is differentiated by surgical service allowing for efficient block allocation. Due to the success of the OR Capacity tool, a Procedural Capacity Tool has been created to actively track all Non-OR Anesthesia (NORA) locations, an important addition as NORA accounts for 51% of our cases by volume.



Abstract Body2:

Real-time operations data is imperative to provide strong decision support when managing the perioperative arena. Our comprehensive cancer center employs the OR Capacity Tool to provide oversight and management of surgical blocks throughout both the operating rooms and procedural areas.

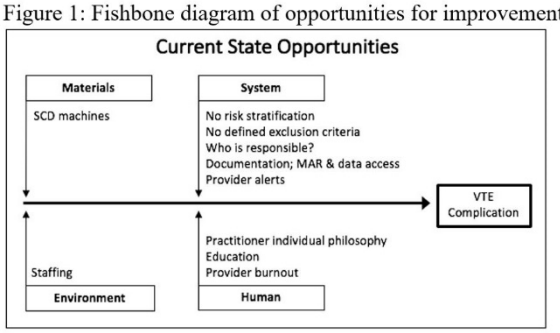
Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM07
Poster Board Number:	
Topic 1:	1.1 Quality Improvement
Publishing Title:	Individualizing Preoperative Risk of Venous Thromboembolism Events in General Surgery Patients: Protocolized Prophylaxis Delivery
Author Block:	**G. Lynde**[1], L. N. Urquia[2], J. Sharma[3]; [1]Emory University, Decatur, GA, [2]School of Medicine, Emory University, Atlanta, GA, [3]Department of Surgery, Emory University, Atlanta, GA.
Abstract Body:	**Title:** Individualizing preoperative risk of venous thromboembolism events in general surgery patients: Protocolized prophylaxis delivery **Introduction** Venous thromboembolic events (VTE) are a leading preventable cause of morbidity and mortality in postoperative patients, with approximately 200,000 deaths attributed to VTE in the United States each year. There is widespread consensus that both mechanical and chemical thromboprophylaxis safely reduce risk of VTE, and multiple evidence-based guidelines recommend routine chemical prophylaxis for the majority of surgical patients. Notably, the National Surgical Quality Improvement Program (NSQIP) Best Practice Guidelines (May 2009) recommends initiation of prophylaxis based on individualized risk stratification. Despite the overwhelming evidence supporting thromboprophylaxis in surgical patients, standardization of processes surrounding its use remain suboptimal. A review of NSQIP-reported data demonstrated a clear trend towards worsening performance of VTE prevention at our hospital, with a risk-adjusted observed:expected odds ratio of 0.67 in 2012 and 1.19 in 2017. Given this trend, we engaged in a retrospective review of patients who developed a VTE complication after surgery and worked to define process gaps in the current implementation of prophylaxis. **Methods** A case-control review of patients undergoing general surgery at Emory University Hospital from 2013-2018 was performed and those who developed postoperative VTE were identified in the NSQIP dataset. Control cases consisting of patients of similar age, gender, and surgery type were identified and compared. Additionally, we performed a survey of providers in the departments of surgery, anesthesia, and nursing to identify process gaps. **Results** In our review, we found no reference to or documentation of a preoperative

assessment or validated risk score calculation for any single subject or control patient. Preliminary analysis of patients who developed VTE after surgery between 2016-2017 revealed that 100% of patients had appropriate SCD placement in the operating room; however, only 10.5% of patients received pre-incision subcutaneous heparin. In addition, 21.1% missed at least one dose while inpatient.
The survey had 69 distinct providers who responded. 58.8% disagreed with the statement that our process for evaluating perioperative VTE risk is well-defined. 66.2% felt that lack of clinician awareness or adherence to VTE prophylaxis guidelines was a driving factor.

Conclusions

Several process breakdowns in our current state of prophylaxis delivery were identified, highlighting opportunities for improvement towards the successful implementation of VTE prevention in our surgical patients (Figure 1). Most notably, patients in our hospital do not
undergo a standardized preoperative assessment of individualized VTE risk using a validated scoring system. Moreover, administration of perioperative chemical prophylaxis is unreliable.
We anticipate using these results to facilitate multidisciplinary pathway development to reduce the rate of VTE.
Figure 1: Fishbone diagram of opportunities for improvement within our current state

Figure 1: Fishbone diagram of opportunities for improvement within our current state



Abstract Body2:

Venous thromboembolic events (VTE) are a leading preventable cause of morbidity and mortality in postoperative patients, with approximately 200,000 deaths attributed to VTE in the United States each year. A case-control review of patients undergoing general surgery at Emory University Hospital from 2013-2018 and developed postoperative VTE identified in the NSQIP dataset was performed. Preliminary analysis of patients who developed VTE after surgery between 2016-2017 revealed that 100% of patients had appropriate SCD placement in the operating room; however, only 10.5% of patients received pre-incision subcutaneous heparin.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM17
Poster Board Number:	02
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Seasonal Variation in Operating Room Costs

Author Block: **S. Goldstein**[1], N. K. Shah[2], E. E. Lebovitz[2], S. M. Littwin[2], M. E. Hudson[3]; [1]Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Pittsburgh, PA, [3]Finleyville, PA.

Abstract Body:

Introduction: Optimization of OR costs is a mainstay of OR management. Models predicting daily caseloads have been developed in an attempt minimize overstaffing[1,2]. Other studies have found that seasonal slowdowns delay necessary surgeries and increase disease recurrence[3]. This study was to identify seasonal variations in OR utilization and costs, while aiming to improve quality and efficiency within a large academic multihospital health care system.

Methods: Data from adult Allegheny County hospitals and ambulatory surgical centers (ASC) from October 2017 - September 2018 was reviewed retrospectively. Hospitals included UPMC Presbyterian, UPMC Shadyside, UPMC Mercy, UPMC Magee, UPMC Passavant, UPMC St. Margaret, UPMC East, and UPMC McKeesport (8). ASCs included South Side, Cranberry, Harmarville, Bethel, and Monroeville (5). Monthly data was grouped and averaged into quarters based on the seasons. We tabulated total OR hours per quarter and specifically analyzed cost per OR hour for physicians, nurse anesthetists and hospital staff which included surgical staff, technicians and support personnel etc.

Results: As seen in Table 1, hospitals have highest costs in Quarter 3, and ASC have highest costs in Quarter 2. The total cost of a season was directly associated with the number of OR hours worked. Physician, CRNA, and hospital hourly costs are inversely associated with total number of OR hours. The total cost per quarter for the hospital system was directly related to the costs at the ASC. Hospital costs are less than ASC costs per hour regardless of season. There is approximately 7x variance in OR hours utilized in ASCs compared to hospitals across seasons. In the hospitals, the OR hours across seasons were 1.74% variable from average, and in the ASCs, the OR hours were 12.16% variable from average. The seasons with the most variation from the mean in both hospitals and ASC were associated with the highest cost per OR hour.

Discussion: Based on the seasonal data from our health system during the past year, it appears that the ASCs are highly variable in the amount of OR hours utilized across seasons. This may contribute to the higher hourly costs, because

optimization is difficult to achieve when total OR hours are highly variable[2]. At UPMC, it would be most optimal to move cases from the ASCs to the hospital during the summer, considering the hourly costs of the facilities are at the extremes. Since the ASCs are most expensive regardless of season, it may be most effective to move surgeries from the ASCs to the hospitals in order optimize health system expenses. When comparing costs per OR hour between hospitals and ASCs, most of the seasonal variation is due to hospital staff cost per OR hour. This study is limited by a lack of revenue data; profit was not studied.

References:

1. Barnoon, Shlomo, and Harvey Wolfe. "Scheduling a multiple operating room system: a simulation approach." *Health services research* 3.4 (1968): 272.
2. Tiwari, Vikram, William R. Furman, and Warren S. Sandberg. "Predicting case volume from the accumulating elective operating room schedule facilitates staffing improvements." *Anesthesiology: The Journal of the American Society of Anesthesiologists* 121.1 (2014): 171-183.
3. Mundi, N., et al. "The impact of seasonal operating room closures on wait times for oral cancer surgery." *Current Oncology* 25.1 (2018): 67.

Abstract Body2:

This study was to identify seasonal variations in OR utilization and costs, while aiming to improve quality and efficiency within a large academic multihospital health care system. It appears that ambulatory surgery centers are more variable in OR hours utilized across seasons compared to hospitals, which decreases cost efficiency. It may be effective to move surgeries from ASCs to hospitals to optimize health system expenses.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM21
Poster Board Number:	03
Topic 1:	1.2 Leadership Development
Publishing Title:	Innovative development of a Leadership Education(LEAD) program at The University of Kansas Health System
Author Block:	**T. Krause**, T. Khan, K. T. Benson, G. Hendren, W. Orr; The University of Kansas Health System, Kansas City, KS.

Abstract Body:

Background

Medicine is a training ground for great leaders. Leadership development programs in healthcare have yielded positive results from those who have participated (1). However, there is a paucity of leadership development opportunities in medicine compared to the executive coaching found in the business world (2). Due to this lack of exposure to leadership training and a substantial increase in growth and opportunities within our institution, our department created an innovative Leadership Education and Development (LEAD) program. The goal of the program was to create an environment where physician anesthesiologists and residents would be exposed to leadership skill development, increase their leadership capacity, and utilize these newly acquired skills to achieve improved patient care, and cultivate and deploy influence to help create a better system of care delivery. This has become a departmental priority as we believe that all anesthesia staff are leaders in various capacities, and therefore would benefit from leadership development that affects all aspects of perioperative care (1).

Program Design

The LEAD program strives to develop leadership skills and competencies of physician anesthesiologists that aren't typically a focus throughout medical school or residency. For example, literature has shown the importance of emotional intelligence as an integral health care leadership competency (1). The program core curriculum is structured to develop emotional intelligence, as well as other necessary leadership competencies such as negotiation, building and managing teams, communication, finance, conflict resolution, innovation, and strategic planning.

The LEAD program is structured to offer a variety of learning opportunities that remain foundational, yet flexible to meet the challenging demands of participants' schedules. The foundation of the program has been monthly evening plenary presentations on one of the core curriculum topics. Presentations occur in a casual, mostly off-campus atmosphere with participants seated around tables to facilitate discussion and camaraderie. Attendance is taken and evaluations are returned for those desiring a certificate of completion at the end of the curriculum.

Sessions are recorded and posted to our LEAD departmental website (3), which is an easily accessible resource library reflecting the curriculum. The program also offers other presentations at varied times, such as late afternoon and hands-on workshops to further develop and hone certain skill sets. Additionally, presentations on leadership topics are integrated into our regularly scheduled departmental meetings, when staff are already in attendance. These are structured as mini-TED talks to enable communication of high yield information in a brief amount of time (10-15 minutes). It has been important for us to incorporate presentations by our own staff in this format to enable development and encourage colleagues to cultivate expertise in a specific leadership area.

Conclusion

Challenges in medicine are myriad and can be daunting. Lack of autonomy and control leads to burnout. Healing is an art, medicine is a science, and healthcare is a business. Physicians are educated in the art of healing and the science of medicine. The LEAD program aims to create physician leaders in healthcare who will be better equipped to rise up to the challenges we face today and tomorrow.

1. Mintz LJ, Stoller JK. A systematic review of physician leadership and emotional intelligence. J Grad Med Educ. 2014 Mar;6(1):21-31.
2. Nicole M. Deiorio, Patricia A. Carney, Leslie E. Kahl, Erin M. Bonura, and Amy Miller Juve.
Coaching: a new model for academic and career achievement. Med Educ Online 2016, 21: 33480 - http://dx.doi.org/10.3402/meo.v21.33480
3. http://www.kumc.edu/school-of-medicine/anesthesiology/lead-program.html

Abstract Body2:

Challenges in medicine are myriad and can be daunting. Lack of autonomy and control leads to burnout. Healing is an art, medicine is a science, and healthcare is a business. Physicians are educated in the art of healing and the science of medicine. The development of a LEAD program aims to create physician leaders in healthcare who will be better equipped to rise up to the challenges we face today and tomorrow, placing them on a pathway towards becoming better healers.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM27
Poster Board Number:	02
Topic 1:	1.1 Quality Improvement
Publishing Title:	**Implementation of the WHO Surgical Safety Checklist for the Vascular Surgery Service**
Author Block:	**J. Hong**[1], M. J. Donnelly[2]; [1]Anesthesiology, University of Colorado School of Medicine, Denver, CO, [2]University of Colorado School of Medicine, Denver, CO.
Abstract Body:	Efforts to improve teamwork and foster a safe culture in operating rooms are linked to better patient outcomes[1, 2]. In services that perform complex procedures, coordination among multidisciplinary team members is vital. The vascular surgery service at the University of Colorado have above average morbidity and mortality rates of 11.25% and 2.41% based on the NSQIP data from FY 2016, compared to expected rates of 8% and 1.5%, respectively. Our group focused on the development of teamwork in the operating room and improving culture through the use of the WHO Surgical Safety Checklist. The WHO introduced the checklist in 2008 in an effort to reduced preventable morbidity and death. In 2009 the Safe Surgery Saves Lives Study Group reported outcomes from an international effort to implement the surgical checklist. After implementation of the checklist mortality decreased from 1.5% to 0.8% and morbidity decreased by 4% [3]. In this presentation, we discuss the outcomes and efforts after implementing the WHO Surgical Safety Checklist for vascular surgery cases, specifically in the following areas: cultural changes, communication, and adverse events. A total of 165 elective vascular cases were performed between January-April 2018. The time outs were performed successfully 33% of the time (37%, 51%, 32%, 11% respectively for each month). During that time period, qualitative surveys were sent pre- and post- implementation to gauge cultural and communication changes. Additionally, post-implementation length of stay, morbidity, and mortality results are reported. Over the course of four months, the implementation of the WHO Safety Checklist shows improved cultural perception among vascular surgery members and little-to-no change for OR staff. Length of stay decreased from an average of 5.56 to 5.23 days; mortality rates from 3.1% to 2.6%; and, overall, decreased readmissions for 7-, 14-, and 30-day readmissions. Several changes to our institution, such as sudden change in vascular surgery staff members, wide fluctuations in OR staff, and types of vascular surgeries, may have confounded our results during this time. A longer trial and application to other surgical subspecialties will be necessary to

draw any definitive conclusions.

1. Haynes et al. BMJ Qual Saf 2011; 20: 102-107 2. Russ S, Rout S, Sevdalis N, Moorthy K, Darzi A, Vincent, C. Annals of Surgery 2013;1-16. 3. Haynes AB, Weiser TG, Berry WR, Lipsitz SR et al. NEJM 2009;360:491-9.

Encounters	FY Q1 2015	FY Q2 2015	FY Q3 2015	FY Q4 2015	FY Q1 2016	Average	FY Q1 2018	FY Q2 2018	Average
Patient Count	66	60	78	65	61	66	53	69	61
Length of Stay	**FY Q1 2015**	**FY Q2 2015**	**FY Q3 2015**	**FY Q4 2015**	**FY Q1 2016**		**FY Q1 2018**	**FY Q2 2018**	
Observed LOS	5.1	7.2	5	5.2	5.3	5.56	5.42	5.03	5.23
Expected LOS	5.2	6.1	5.8	5.9	5.4	5.68	6.67	6.09	6.38
LOS Index	0.98	1.19	0.86	0.88	0.99	0.98	0.81	0.83	0.82
Mortality									
Observed Mortality	3.0%	3.3%	1.3%	4.6%	3.3%	3.1%	3.8%	1.5%	2.6%
Expected Mortality	2.0%	1.9%	2.3%	2.2%	2.9%	2.3%	4.3%	3.6%	3.9%
Mortality Index	1.52	1.72	0.57	2.14	1.12	1.41	0.88	0.41	0.67
All Cause Readmissions									
30 Day Readmissions*	9%	21%	16%	13%	26%	17%	2%	9%	5%
14 Day Readmissions	9%	16%	10%	8%	14%	11%	2%	3%	2%
7 Day Readmissions	5%	12%	6%	5%	11%	8%	2%	1%	2%

Cultural Questions	OR Team			Vascular Surgery Team		
	Pre	Post	Trend	Pre	Post	Trend
Everyone participates in efforts to approve patient safety	82.98%	87.09%	↑	100.00%	88.89%	↓
Team members are open to changes that improve patient safety even if it means slowing down	60.64%	64.52%	↑	57.14%	77.77%	↑↑
Pressure to move quickly from case to case gets in the way of patient safety	64.89%	74.20%	↑	78.57%	66.66%	↓
I am treated as a highly valued member of the team	79.79%	64.52%	↓	71.43%	100.00%	↑↑↑
I would feel safe being treated here as a patient	85.11%	82.25%	↔	78.58%	100.00%	↑↑
Working here is like being a part of my large family	57.45%	51.62%	↓	64.29%	77.78%	↑
I am proud to work in this clinical area	93.61%	91.93%	↔	78.57%	100.00%	↑↑
I like my job	95.75%	93.54%	↔	71.42%	88.88%	↑↑
This is a good place to work	92.47%	87.09%	↓	88.89%	88.89%	↔
Morale in this clinical area is high	58.51%	66.13%	↑	57.14%	66.66%	↑
Teamwork and Communication Questions	**OR Team**			**Vascular Surgery Team**		
	Pre	Post	Trend	Pre	Post	Trend
Team discussions (e.g., briefings or debriefings) are common	55.92%	59.68%	↑	42.86%	55.55%	↑
All team members work together as a well-coordinated team	74.47%	67.74%	↓	64.28%	99.99%	↑↑↑
For complex cases, briefings include planning for potential problems	81.91%	75.80%	↓	85.72%	77.78%	↓
Team members share key information as it becomes available	82.97%	79.03%	↔	92.85%	100.00%	↑
The entire team discusses key concerns for patient recovery and management before the patient leaves the room	39.36%	38.71%	↔	50.00%	88.88%	↑↑↑↑
It is difficult to speak up when I perceive problems with patient care (**disagree)	70.21%	70.97%	↔	71.43%	66.66%	↑
It is difficult to discuss medical mistakes (**disagree)	25.81%	22.58%	↔	42.86%	55.55%	↓

Abstract Body2:

The four-month implementation of the WHO Surgical Safety Checklist showed shorter length of stay, decreased mortality, and lower readmission rates. Qualitative surveys suggest the surgical team perceived better culture and team communication compared to OR staff. Long-term implementation is needed to draw more definitive conclusions.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM25
Poster Board Number:	03
Topic 1:	1.3 Challenging Cases and their Innovative Solutions in Practice Management
Publishing Title:	Impact of Additional Operating Rooms on Extra Rooms Working Late
Author Block:	**E. Bowe**[1], E. A. Topmiller[1], D. D. Nguyen[2], S. G. Gambrel[2], B. C. Sindelar[1]; [1]Anesthesiology, University of Kentucky, Lexington, KY, [2]Lexington, KY.
Abstract Body:	INTRODUCTION In 2017 for our main hospital, a Level I Trauma Center, demand for operating room (OR) time exceeded available prime time resources. Although new ORs were under construction, until those ORs were available it was necessary to use the existing resources to perform elective surgery on evenings, nights, and weekends ("after hours"). The OR Executive Committee (composed of representatives from Anesthesiology, Surgery, Nursing, and Hospital Administration) determined the number of ORs to run throughout the weekday and on weekends. The intent was to have ORs available for elective surgery after hours while continuing to provide the resources necessary for a Level I Trauma Center. In-house staffing for both Anesthesiology and Nursing was determined based on these numbers. Review of utilization data revealed that it was common to run more than the agreed upon number of ORs ("extra ORs") after hours. When this occurred, additional on-call staff (anesthesia providers and nursing) were commonly required to meet this demand. The new ORs opened in August, 2018 without any reduction in after hours staffing. Our impression was that even after opening the additional ORs, that there was no decrease in the frequency extra ORs. We undertook a study to compare after hours utilization of the ORs before and after the surgical suite expansion. METHODS Utilizing the OR tracking program we determined the number of ORs running every 1-hour epoch during a 3-month period immediately after opening the new ORs (August-October, 2018) with the same period for 2017. Weekends and holidays were excluded from the analysis. We used the period 7 PM to 7 AM on weekdays as constituting after hours work. We determined the frequency with which extra ORs were needed during the two periods. RESULTS Data are presented in the Table.

	Number of Weekdays	Frequency of Extra ORs	Mean ± SD Number of Extra ORs/Day	95% Confidence Intervals
Before New ORs	64	199	3.0	2.5 – 3.5
After New ORs	64	141	2.2	1.7 – 2.6

A t-test was conducted to compare the frequency with which the number of rooms running after hours exceeded the agreed upon number before and after opening the additional ORs. There was no significant difference between the two time periods at the $p < 0.05$ level.

DISCUSSION

Despite increasing the number of ORs from 26 to 34, there was no change in the frequency with which the number of ORs running after hours exceeded the agreed upon maximum. Further work needs to be undertaken to determine if this was due to an increase in surgical volume, an increase in the duration of procedures, or a decrease in prime time utilization.

Abstract Body2:

Despite increasing the number of prim time ORs from 26 to 34, there was no reduction in the frequency with which the number of rooms running between 7 AM and 7 PM exceeded the agreed upon maximum.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM09
Poster Board Number:	01
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Management of a perioperative care center by an attending anesthesiologist is associated with a reduction in day of surgery cancellations.
Author Block:	**M. Meyer**[1], S. Vig[2], R. A. Gabriel[3], U. H. Schmidt[2]; [1]Anesthesiology, University of California San Diego, San Diego, CA, [2]San Diego, CA, [3]University of California, San Diego, San Diego, CA.
Abstract Body:	**Introduction:** While the existence of preoperative care centers (PCC) has been shown to have several benefits, including reduced same day cancellations and improved patient satisfaction the ideal setup of such clinics has not been fully examined, nor an optimal care model yet established. At this center, the PCC structure was altered to include a full time attending anesthesiologist to supervise, educate, and manage clinic workflows and operations. We hypothesized that the attending presence would decrease the number of same day surgery cancellations. Secondary aims were to review the number of clinic visits and cost efficiency. **Methods:** A retrospective cohort analysis was conducted at the two hospital locations of the University of California, San Diego (UCSD) Preoperative Care Center (PCC) that is used to evaluate all UCSD surgical patients preoperatively. Overall analysis of the one-year period "Before" (October 2015-2016) and "After" (October 2016-2017) the introduction of the attending anesthesiologist position into the PCC care model was performed. Data collected for each subject in both time windows included basic demographic information, type of surgical procedure, American Society of Anesthesiologists physical status classification (ASA) score, date of PCC visit and occurrence of same day surgery cancellation. Only patients whose PCC visit occurred within 60 days prior to their scheduled surgery were included in this dataset. R, a software environment for statistical computing (R version 3.3.2), was used to perform all statistical analyses. The primary outcome of interest was occurrence of same-day cancellation. A Pearson's Chi-squared test was utilized to measure differences between categorical variables, respectively. A p-value < 0.05 was considered statistically significant. A multivariable logistic regression analysis was performed to assess for the association of attending presence and case cancellations and to control for ASA score, patient age, sex, and surgical service. Odds ratio (OR) and 95% confidence interval (95% CI) were reported. **Findings:** There were 50,332 cases that qualified for this study with 21,815 cases seen in the year prior to the PCC care model alteration and 28,517 cases seen in

the following year. There were 669 (3.1%) and 752 (2.6%) cases cancelled in the "Before" and "After" cohorts, respectively (p = 0.0004) even while the number of cases seen in the PCC increased (from 21,815 to 28,517). When controlling for ASA class, sex, surgical service, and age, the introduction of the attending anesthesiologist into the PCC care model was associated with reduced case cancellations (OR 0.84, 95% CI 0.70 - 0.98) which resulted in significant cost savings for the hospital system (approximately $230,000 to $300,000).
Discussion: This retrospective analysis demonstrated that the incorporation of a full time anesthesiologist in the PCC led to a statistically significant decrease in same day case cancellation rates, even while accommodating more patient visits overall. This leads us to conclude that an attending presence improves not only PCC workflows and efficiency, but also is associated with an improvement in the quality of preoperative evaluations and patient optimization. Based on the cost analysis, there was a significant saving that occurred in the year after the anesthesiologist began staffing PCC, which largely displaces the cost of that staffing. Given industry trends and the expanding role of the anesthesiologist in the perioperative space, it is important to establish a PCC where centralized communication and coordination can occur. While there is an upfront cost to incorporating a full time anesthesiologist in PCC, the streamlined patient care, improved patient satisfaction and future cost savings largely offset this cost and provide a net benefit to our healthcare system as a whole.

Abstract Body2:

Preoperative care centers (PCC) can improve patient satisfaction and reduce the number of day of surgery cancellations. However, optimal staffing models have not been established. At this center, the PCC structure was altered to include a full time attending anesthesiologist which resulted in a statically significant reduction in same day surgery cancellations and improved cost efficiency.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM05
Poster Board Number:	
Topic 1:	1.1 Quality Improvement
Publishing Title:	Riding the Winds of Change: Evolution of an Anesthesiology Value Metrics Incentive Program within a Large Academic Medical System
Author Block:	**N. Shah**[1], E. E. Lebovitz[1], J. Artman[1], S. M. Littwin[1], M. E. Hudson[2]; [1]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Finleyville, PA.
Abstract Body:	**Introduction:** Current literature suggests that it takes an average of 17 years to develop and implement guidelines to change clinical practices[1,2]. Departments in academic medical centers have utilized value incentives to increase the rate of implementation and adherence to desired clinical outcomes. There is limited existing research, especially in anesthesiology, on provider performance and quality of care once financial incentives are removed. Research has shown that the interactions between intrinsic motivation of providers and extrinsic rewards are complex; it is difficult to assess when incentivized behaviors become standard of care and the incentive thus becomes superfluous[3,4] . We aimed to monitor compliance to evidence-based practice guidelines by measuring goal compliance before and after the incentive was removed. **Methods:** University of Pittsburgh Medical Center, Department of Anesthesiology, a University Physicians Practice, rapidly introduced evidence-based practices across 11 separate departmental divisions spanning 18 surgical facilities utilizing a value based incentive program starting in FY2017. Evidence-based metrics for FY2017 included lung protective ventilation[5]; intraoperative glucose monitoring and treatment[6]; transfusion trigger[7,8,9]. For FY2018 responsible albumin[10] use was selected. To aid in achieving compliance, a modest incentive (<2.5% of total compensation) was paid to providers who succeeded in the defined metric goals for the first 12 months. After this time, the entire incentive was removed, and no further re-education was given to providers. Compliance for each metric continued to be monitored after the incentive was removed. **Results:** After initiation of the incentive period, there was a rapid increase in compliance to goal thresholds (80%) within 12 months for all metrics (Table 1). After the initial 12-month period, compliance decreased for intraoperative blood glucose monitoring, however, all sites maintained a higher compliance compared to pre-implementation levels. For lung protective ventilation and transfusion trigger, there were isolated sites where a decline in compliance below 80% was noted but the average compliance was above goal threshold. For

albumin usage, all sites achieved the goal threshold of less than 7% of anesthetics within six months and continued to maintain similar usage over the subsequent six months. **Discussion:** Research has shown that removal of financial incentives lead to immediate reductions in quality of care in the first year[11]. We saw a decline in average compliance to guidelines after the incentive was removed, but it was most noted in a metric that was more labor intensive. The disruption in the workflow may have led providers to decrease compliance more quickly. Previous studies have suggested having a stepwise reduction of payments rather than blanket removal[12]. In addition, it may be worth discussing a limit to the level of decline in compliance that could trigger a review and possible reintroduction of the metric.

	Intraoperative Blood Glucose Monitoring and Treatment					Lung Protective Ventilation					Packed Red Blood Cell Transfusion					Albumin Usage			
Institution	June 2016*	December 2016^	June 2017^	December 2017^	June 2018^	June 2016*	December 2016^	June 2017^	December 2017^	June 2018^	June 2016*	December 2016^	June 2017^	December 2017^	June 2018^	Percent Usage CY2016	Percent Usage FY2018 (July-December)	Percent Usage FY2018 (January-June)	Percent Usage FY2019 (July-October)^
Site A	21.2%	82.7%	92.9%	56.0%	46.0%	47.7%	89.5%	90.3%	89.0%	88.0%	80.0%	100.0%	87.5%	93.0%	85.0%	2.0%	0.4%	0.4%	0.3%
Site B	8.0%	57.4%	76.2%	55.0%	53.0%	67.0%	82.8%	87.6%	82.0%	88.0%	87.0%	100.0%	100.0%	75.0%	100.0%	3.6%	1.5%	2.7%	1.8%
Site C	61.2%	67.8%	81.1%	73.0%	59.0%	69.9%	86.5%	89.9%	90.0%	89.0%	87.0%	90.0%	91.7%	89.0%	86.0%	8.8%	4.9%	4.7%	5.7%
Site D	15.7%	81.4%	85.8%	68.0%	57.0%	45.5%	84.9%	91.4%	85.0%	85.0%	83.0%	90.2%	97.9%	94.0%	88.0%	4.6%	1.0%	1.0%	1.2%
Site E	30.0%	80.9%	80.1%	72.0%	70.0%	49.7%	92.9%	94.9%	92.0%	92.0%	48.0%	92.0%	90.7%	83.0%	83.0%	4.2%	1.8%	1.8%	2.3%
Site F	59.8%	82.1%	85.0%	76.0%	78.0%	83.2%	93.3%	95.4%	95.0%	95.0%	58.0%	85.6%	89.3%	85.0%	82.0%	16.7%	6.7%	5.7%	6.6%
Site G	67.4%	78.0%	79.9%	67.0%	71.0%	52.2%	91.0%	89.9%	89.0%	87.0%	87.0%	94.0%	90.6%	94.0%	89.0%	16.2%	1.4%	1.4%	4.1%
Site H	10.3%	76.1%	84.2%	70.0%	65.0%	52.2%	93.9%	95.2%	89.0%	85.0%	31.0%	81.8%	81.5%	82.0%	81.0%	13.7%	0.9%	0.5%	1.3%
Average	34.2%	75.8%	81.9%	66.9%	59.3%	60.1%	89.4%	91.8%	88.1%	86.3%	80.1%	91.7%	91.2%	84.5%	84.3%	8.7%	2.3%	2.3%	2.9%

*Average compliance from May and June 2016 prior to implementation
A= Average compliance for given metric from June 2016 to December 2016
B= Average compliance for given metric from January 2017 to June 2017
C= Average compliance for given metric from July 2017 to December 2017, metric no longer linked to compensation incentive
D= Average compliance for given metric from January 2018 to June 2018, metric no longer linked to compensation incentive
E= Average compliance for given metric from July 2018 to October 2018, metric no longer linked to compensation incentive

Table 1: Compliance data for various metrics for FY 2017 to FY 2019

Abstract Body2:

In medicine, it takes an average of 17 years to develop and implement guidelines to change clinical practices. Many departments have tried to use value incentives to increase rate of implementation and adherence to desired clinical outcomes. There is limited research in medicine, especially in anesthesiology, on what occurs once the financial incentives have been removed. This study analyzes adherence to evidence based guidelines after financial incentives were removed at an academic center. Results show that although compliance decreased, overall compliance remained higher than before the guidelines were introduced.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM19
Poster Board Number:	01
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Cost Effectiveness Analysis of Sugammadex Compared to Neostigmine for Reversal of Rocuronium-Induced Neuromuscular Blockade in a Large, Multi-Hospital Healthcare System
Author Block:	**E. Lebovitz**[1], N. K. Shah[2], J. Artman[1], S. M. Littwin[2], M. E. Hudson[3]; [1]Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Pittsburgh, PA, [3]Finleyville, PA.
Abstract Body:	**Introduction:** Sugammadex is the first selective binding agent for reversal of neuromuscular blockade induced by rocuronium and other steroidal non-depolarizing neuromuscular blocking agents (NMBAs). Its efficacy and safety have been established in numerous studies including two recent Cochrane reviews[1-3]. These studies demonstrated faster reversal of moderate neuromuscular blockade (6.6x faster than neostigmine), 40% decreased adverse events (bradycardia, post-operative nausea vomiting, post-operative residual paralysis) compared to neostigmine, and a NNT of 8 to avoid an adverse event. The objective of our current analysis is to examine data within our own institution comparing sugammadex and neostigmine in the context of cost and patient outcomes after general anesthesia.Methods: A retrospective analysis was performed on 57,349 patients throughout the Department of Anesthesiology at the University of Pittsburgh Medical Center (UPMC). Of these patients, 34,936 received neostigmine and glycopyrrolate, 21,109 received sugammadex, and 1,304 received both. Medication costs were calculated from current pharmacy values. Outcomes for adverse events and analysis were also performed.Results: Patients who received neostigmine had a decreased latency from completion of procedure to leaving the operating room 12.43 min vs. 14.25 min ($p < 0.05$) but had a higher intubation rate in the post-anesthesia recovery area, 0.094% vs. 0.071% ($p < 0.05$). Patients receiving neostigmine then sugammadex had the longest delay from procedure completion to patient out of room (18.39 min) and the highest rates of reintubation at 0.31%. PONV was higher in the neostigmine group 0.163% vs. 0.090% ($p < 0.05$) in the sugammadex group though rates of antiemetic usage were similar (27.01% vs. 25.68%, $p > 0.05$). Deferred extubations were not significantly different, 5.8% vs. 5.7% ($p > 0.05$) in the neostigmine and sugammadex groups, respectively, however in ASA 3-5 patients, rates of reintubation were significantly higher in the neostigmine group as compared to the sugammadex group (0.19% vs. 0.09%, $p < 0.05$). Average cost per case of neuromuscular blockade was higher for those patients receiving

sugammadex vs. neostigmine, $118.27 vs. $62.54, respectively. Discussion: Previous studies have suggested that sugammadex is superior to neostigmine in decreasing operating room time, PONV, and residual paralysis. In our study, we found lower levels of PONV and reintubation with sugammadex coupled to a 90% greater cost per dose. Our retrospective study may have been subject to provider bias wherein provider preference may have resulted in higher usage of sugammadex in sicker patients. This may account for the lower rate of intubation in ASA 3-5 patients and longer time prior to leaving the OR room for patients receiving sugammadex. Future studies will need to examine randomized groups for more appropriate clinical comparisons and to remove inherent biases.References:1. Abrishami A1, Ho J, Wong J, Yin L, Chung F. Sugammadex, a selective reversal medication for preventing postoperative residual neuromuscular blockade. Cochrane Database Syst Rev. 2009 Oct 7;(4):CD007362.2. Khuenl-Brady KS, Wattwil M, Vanacker BF, Lora-Tamayo JI, Rietbergen H, Alvarez-Gómez JA. Sugammadex provides faster reversal of vecuronium-induced neuromuscular blockade compared with neostigmine: a multicenter, randomized, controlled trial. Anesth Analg. 2010 Jan 1;110(1):64-73.3. Hristovska AM, Duch P, Allingstrup M, Afshari A. Efficacy and safety of sugammadex versus neostigmine in reversing neuromuscular blockade in adults. Cochrane Database Syst Rev. 2017 Aug 14;8:CD012763.

Abstract Body2:

We retrospectively examined clinical effects and cost effectiveness of neostigmine versus sugammadex for reversal of rocuronium induced neuromuscular paralysis. We found lower levels of PONV and reintubation rates with sugammadex coupled to a 90% greater cost per dose. Our retrospective study may have been subject to provider bias wherein provider preference may have resulted in higher usage of sugammadex in sicker patients.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM22
Poster Board Number:	04
Topic 1:	1.1 Quality Improvement
Publishing Title:	Awareness of Cost and Resource Usage

Author Block: **A. Levine**[1], P. K. Upadya[2], A. Rahman[3], T. Wieland[4];
[1]Anesthesiology, St. Joseph's University Medical center, Paterson, NJ, [2]St. Joseph's University Medical Center, Paterson, NJ, [3]Stony Brook University Medical School, Stony Brook, NY, [4]St Joseph's University Medical Center, Paterson, NJ.

Abstract Body:

Background:

Cost unawareness among healthcare providers leads to major financial burdens in need of quality improvement. We sought to understand the cost awareness deficit across different types of medical professionals with varying years of service. We predict that medical professionals with greater experience will possess better-cost awareness than those with less experience.

Methods:

An anonymous survey evaluating the cost awareness of 26 commonly used medications in the operating room and intensive care unit was conducted at St. Joseph's University Medical Center (a major academic medical center and state designated trauma center) from October 15, 2018-November 11, 2018. The survey was distributed both in paper form and electronically. After ascertaining the type of medical professional (medical student, anesthesiology resident, surgery resident, anesthesiology attending, surgery attending), and years of service (0-11 Months, 1-5 years, 6-10 years, 11-20 years, >20 years), the survey participants were asked to write their best-cost estimation of each medication in dollars. The responses were compared to the most up to date medication costs, and the resultant data was evaluated for statistically significant differences in accuracy of cost prediction.

Results:

A total of 72 surveys were collected from nine medical students (mean length of training 0.322 yrs, std dev. 0.156), six surgery residents (mean length of training 2.417 yrs, std dev. 1.497), 20 anesthesiology residents (mean length of training 2.03 yrs, std dev. 1.333), four surgery attending physicians (mean length of training 24.5 yrs, std dev. 13.699), and 33 anesthesiology attending physicians (mean length of training 15.545 yrs, std dev. 10.223). The Durbin-Watson test determined that there was an independence of residuals, the Shapiro-Wilk test showed the data to be non-normally distributed, and the linear regression was not

Abstract Body2:

significant (p>t 0.262) between accuracy and years of service. A Kruskal-Wallis H-test was conducted and showed a statistically significant difference in productivity amongst the five groups distinguished by type of professional; $\chi^2(2) = 9.649$, $p = 0.0468$. However, there was no statistically significant difference in productivity amongst the following comparisons: anesthesiology attending physicians and all other groups, $\chi^2(2) = 1.212$, $p = 0.2710$; surgery attending physicians and all other groups, $\chi^2(2) = 1.670$, $p = 0.1963$; medical students and all other groups, $\chi^2(2) = 3.856$, $p = 0.0496$. In addition, the Kruskal-Wallis H-test showed no statistically significant difference between categorized groups of years of service $\chi^2(2) = 7.386$, $p = 0.1168$

Conclusions:

We found that years of service did not influence cost awareness. Grouping by the type of medical professional did show a statistically significant influence on cost awareness. This study highlights the need for innovative solutions to educate the medical community on cost conscious clinical practice management.

Cost unawareness amongst healthcare providers leads to unnecessary healthcare spending in a notably financially burdened field. An anonymous survey evaluating a medical professional's perceived cost of commonly used medications has shown that length of clinical experience does not influence the level of cost awareness. These results highlight the need for ongoing education about medication costs, through the use of QI modalities in order to decrease extraneous spending.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM10
Poster Board Number:	02
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Variations in Costs Per Operating Room Hours Between Hospitals and Ambulatory Surgical Centers
Author Block:	**N. Shah**[1], A. M. Zariwala[2], E. E. Lebovitz[1], S. M. Littwin[1], M. E. Hudson[3]; [1]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, [2]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Mount Airy, MD, [3]Department of Anesthesiology and Perioperative Medicine, University of Pittsburgh Medical Center, Finleyville, PA.
Abstract Body:	**Introduction:** Operating room costs comprise a significant portion of a hospital system's operating budget[1]. Many factors go into determining costs per operating room hour[2]. Understanding these components can help identify areas to reduce costs and improve operational efficiency. The current study examined variations in cost per OR hour between different hospitals and ambulatory surgical centers within a large academic medical center. **Methods:** Data from eight adult Allegheny County hospitals, three hospitals outside of Allegheny county, five ambulatory surgical centers (ASC), and a Children's hospital from October 2017 - September 2018 were reviewed retrospectively. Monthly data were grouped and averaged into quarters based on season. We determined total OR hours per quarter and analyzed cost per OR hour for physicians, nurse anesthetists (CRNAs), and OR staff which included surgical staff, technicians, and support personnel. **Results:** Significantly more operating room hours were performed in the Allegheny County adult hospitals (152,428 hrs) compared to surgical centers (10,509 hrs) and our Children's hospital (16,570 hrs). Physician costs comprised the greatest proportion of staffing costs compared to CRNAs and OR staff in the hospital setting. Per OR hour, physician costs in Allegheny County adult hospitals were $186.00 (35%), compared to $166.00 for CRNAs (31.5%), and $175.00 for OR staff (33%). In non-Allegheny County hospitals, physician costs were $212.00 (35%), CRNAs were $189.00 (31.5%), and OR staff were $199.00 (33%). At our Children's hospital, physician costs were $360.00 (54%), CRNAs were $107.00 (16%), and OR staff were $202.00 (30%). In adult ambulatory surgical centers, physician costs were $196.00 (22%), CRNA costs were $199.00 (23%), and OR staff costs were $492.00 (55%). Overall costs per OR hour were higher in the adult ambulatory surgical centers in Allegheny County at $887.00 per hour compared to $527.00 per hour in the adult hospital OR setting. **Discussion:** This study

examined the costs per hour of staffing at various surgical locations within our healthcare system. Location of surgery can significantly impact costs since inpatient surgeries tend to be more expensive than similar procedures performed in the outpatient setting3. Physician anesthesiologists accounted for a large portion of these costs while OR staff and CRNA costs are nearly equivocal throughout most locations. Interestingly, when comparing the cost differences between surgical centers and hospitals, surgical center costs appear to be driven by costs related to OR staff, which account for more than half of the cost per hour in surgical centers compared to about 33% in other settings. Call-offs, downtime, and variable caseload may lead to more OR staff required than is truly needed causing costs to balloon. Minimizing seasonal and daily/weekly variance in surgical case volume and staffing needs may ultimately make meeting operating room demands more predictable and efficient in the long term. In terms of seasonality, further investigation into holiday pay or comp time needs to be investigated when evaluating different sites and their different costs per provider.

Facility	Total OR Hours	Total Cost/hr	Physician/hr	CRNA/hr	OR Staff/hr
Allegheny County Adult Hospitals	152428	$527	$186	$166	$175
Non-Allegheny County Hospitals	21451	$600	$212	$189	$199
Children's Hospital	16570	$669	$360	$107	$202
Adult Surgical Centers	10509	$887	$196	$199	$492

Abstract Body2:

This study examines costs associated with surgical care in a large multicentered academic health system which include hospitals, surgical centers, and pediatric facilities. Data from seventeen different locations was analyzed and trended. Cost per OR hour for each site was determined and divided into costs for different providers (Physician Anesthesiologist, Nurse Anesthetists and OR staff). The study provides avenues for reducing costs by comparing the variance between different facilities.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM14
Poster Board Number:	02
Topic 1:	1.1 Quality Improvement
Publishing Title:	**Endotracheal Tube Cuff Pressures: An Overinflated Problem?**
Author Block:	**S. Badani**[1], A. J. Persinger[2], C. G. Simmons[2]; [1]University of Colorado School of Medicine, Aurora, CO, [2]Denver, CO.
Abstract Body:	**Introduction:** There are over 20 million endotracheal intubations performed annually in the United States. These patients are exposed to the possibility of tracheal damage from endotracheal tube (ETT) cuff over inflation. The endotracheal tube balloon is designed to allow for positive pressure ventilation and protection from gastric reflux yet is associated with multiple co-morbid conditions including sore throat, vocal cord injury, and tracheal ischemia resulting in tracheal stenosis in patients. Recent studies suggest that maintaining ETT cuff pressures less than 34 cm H2O can reduce tracheal mucosa injury as well as post-extubation sore throat. In addition, traditional means of assessing cuff pressures and provider experience have proven ineffectual in pressure estimation. We hypothesized that anesthesia providers frequently introduce an inappropriate amount of air in to the endotracheal tube cuff, inadvertently exposing patients to an increased risk of these complications. Furthermore, the proposed intervention of ETT cuff manometer use, with appropriate correction of cuff pressure to the recommended 20-30 cm H20, would decrease the incidence of over inflation. **Methods:** Utilizing PDSA Cycle and Root Cause Analysis (RCA) methodology we developed a quality improvement project to analyze, assess, and implement a project that would result in the greatest possible positive change. A random sample of sixty outpatient OR cases over two days were selected for monitoring of ETT cuff pressures. An endotracheal tube manometer, Posey Cufflator™ was used to check the ETT cuff pressure within 20 minutes of induction and placement of an ETT and again prior to extubation. Secondary data was collected on incidence of sore throat in PACU. Patients were interviewed and scored by a single interviewer using a standardized questionnaire and Likert scaled scoring. A single individual collected and documented all data. **Results:** Results of this project supported previously completed studies with a majority of providers, ~80%, (47 of 60) overinflating ETT cuffs. Only 20% of initial recordings were in the appropriate range. Each cuff pressure was measured, with one pressure recording of >70mmHg. Secondary endpoint analysis revealed no apparent correlation between cuff pressure and report of sore throat in PACU.

Abstract Body2:

With over 70% of providers in our survey inflating ETT cuffs above the safe upper limit, there is a need for accurate and routine monitoring of ETT cuff pressures. While no correlation was found between ETT cuff pressure and sore throat reports post-op, larger studies would be useful to clarify the incidence of this problem. There is no other circumstance in anesthesia practice where it is considered acceptable to render a part of the patient's body ischemic, and knowingly or unknowingly, leave it that way. Therefore, not assessing ETT cuff pressure essentially permits this act of negligence and potential harm.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM20
Poster Board Number:	02
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	**Utility of a Screening Questionnaire for Pre-Anesthetic Evaluation**
Author Block:	**J. Devarajan**[1], R. O. Okal[1], K. C. Cummings[2]; [1]Anesthesiology, Cleveland Clinic, Cleveland, OH, [2]Beachwood, OH.

Abstract Body:

Utility of a Screening Questionnaire for Pre-Anesthetic Evaluation

Preoperative evaluation improves safety and quality of anesthetic care. It also serves to improve efficiency on the day of surgery. High risk patients are identified early and their condition is optimized which improves their perioperative management and outcomes[1]. However, it is not certain that all patients would benefit from in-person evaluation. For young healthy patients, a preoperative visit may not provide value to the patient or health care system. The patients can be triaged (using a screening questionnaire) based on their medical history. This would liberate time and resources for patients with multiple comorbidities, requiring extensive preoperative work up and care coordination. Hence, economic and logistical factors form a strong argument to find a good preoperative screening test to obviate face to face consultation. Previous studies show that 11% of intraoperative events are due to poor preoperative preparation and half of them are avoidable. Hence, a screening test should have high negative predictive value. The screening test should also serve to identify high risk patients, creating a window of opportunity for medical optimization. Hence, we developed a questionnaire to identify the healthy patients and patients at risk. The aim of this chart review is to assess whether a particular screening questionnaire is effective in identifying the patients who have been referred to further preoperative consult and whether there was any cancellation on the day of surgery.

Methods:

The ultimate aim of the project is to apply in real time and assess whether using the questionnaire and bypassing the pre-operative assessment caused delay in on time start of the case or cancellation on the
day of surgery. However, as a preliminary analysis, we reviewed 70 charts to identify whether the current questionnaire identified the risk of patients who have been referred to a specialist. Also, we reviewed whether there was any cancellation on the day of surgery in the absence of further referral from the preoperative assessment clinic.

Results:

We reviewed a total of 70 patients. 13 patients were referred to further consultations like pulmonology and cardiology or primary care practitioner and all of them would have been identified appropriately with the questionnaire. There were 21 patients who would have answered negative to all the questions and none of them needed any referral or further preoperative optimization. These patients were ASA physical status I-II patients, and none had any cancellation on the day of surgery nor had any perioperative complications.

Conclusion:

We validate that the current preoperative questionnaire would screen effectively patients who do not have any clinical conditions affecting perioperative risk. This was a retrospective study lacking a real time information from the patients. Patients provided the answers to the mid-level providers which were relied upon. We also plan to include outcome variables whether such a screening questionnaire increased first case delay or turnover times related to anesthesia. Also we would include provider satisfaction on the preoperative optimization of the patients. The questionnaire provided adequate information on which patients needed further evaluation.

References:

1.
Mendes FF, Machado EL, de Oliveira M, Brasil FR, Eizerik G, Teloken P. Preoperative evaluation: screening using a questionnaire. *Brazilian J Anesthesiol*. 2013;63(4):347-351.
doi:10.1016/j.bjane.2012.07.006

Questionnaire used

1. Do you have heart problems (heart attack, heart (coronary) stents, congestive heart failure, valve problems, bypass surgery, aneurysm, irregular heart beat)
2. Do you have a pacemaker or defibrillator?
3. Do you have chest pain or chest tightness on walking or exercising
4. Do you have breathing problems (COPD, emphysema, chronic bronchitis) or use oxygen at home?
5. Have you had any recent asthma attack which required hospitalization within one month?
6. Do you have kidney failure requiring any type of dialysis?
7. Do you take blood thinners other than Aspirin (i.e. Coumadin, Pradaxa, Plavix, Effient)?
8. Have you ever had a stroke or seizure
9. Have you or your blood relative had a major reaction to anesthesia? (becoming sick or developing nausea and vomiting is not included)
10. Do you get short breath walking on flat ground?

Patients answering 'YES' to any of questions 1-10 require a PAT Clinic appointment

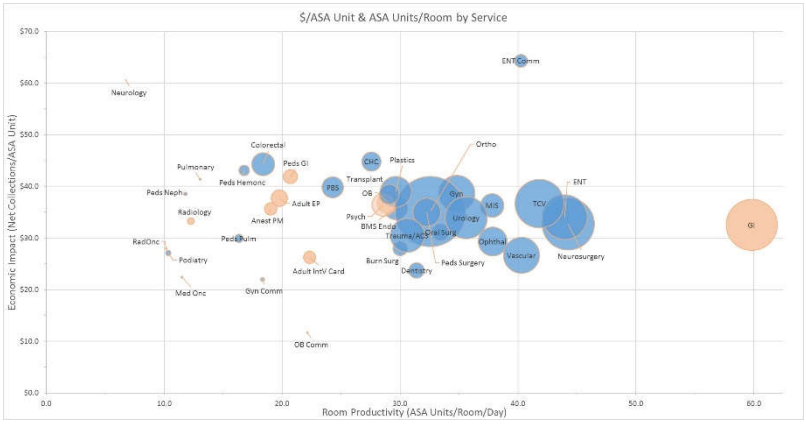
11	Do you use insulin for diabetes?
12	Do you have sleep apnea?
13	Do you find it difficult to climb a full flight of stairs without stopping to rest?
Patients answering 'YES' to two or more of questions 11-13 require a PAT Clinic appointment	

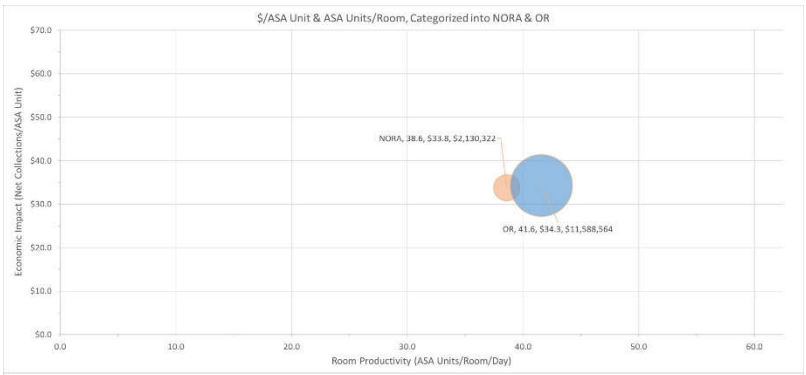
Abstract Body2:

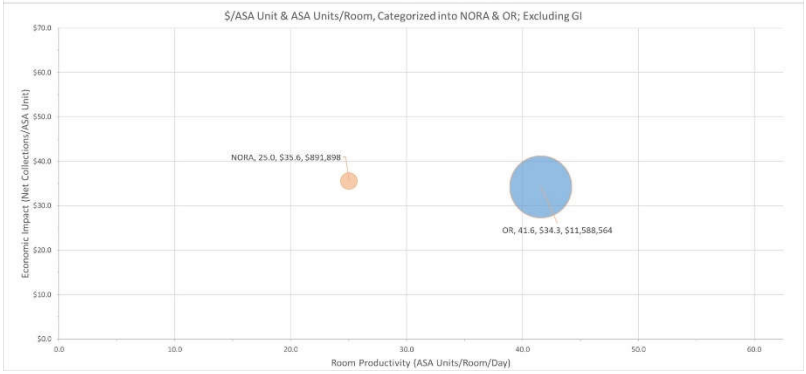
Preoperative screening can be effectively done using the questionnaire which has identified all patients who would require preoperative work up and obviated many ASA I-II patients from in-person evaluation. Bypassing PACC exam did not increase the incidence of same day cancellation. The patients who could have been bypassed did not develop any perioperative complications.

Session Number:	P00
Session Title:	Practice Management 2019 Poster Judging
Location:	Connection Center
Session Time:	Friday, January 18, 2019, 3:30 pm - 5:00 pm
Presentation Number:	PM06
Poster Board Number:	
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	A Methodology to Compare Disparities in Revenue Generation and Productivity between OR and NORA Locations
Author Block:	**B. Peckham**[1], M. Tsai[2], C. R. Giordano[1], S. Sumner[1], C. Mayhew[2], T. E. Morey[1]; [1]Department of Anesthesiology, University of Florida, Gainesville, FL, [2]Department of Anesthesiology, University of Vermont Medical Center, Burlington, VT.
Abstract Body:	**Background:** Anesthesia services continue to increase in non-OR anesthesia locations (NORA) such as radiology, cardiac catheterization suites, and others. With benchmarking of individual anesthesiologists and facilities becoming increasingly relevant, understanding how different locations perform is crucial. Abouleish et al. established productivity metrics at site levels.[1] Recently, Hudson et al. demonstrated that faculty productivity hinges on the percentage of NORA cases covered by the staff member.[2] To better understand NORA metrics, we defined productivity as ASA units produced by each service/day and economic impact defined as net collections/ASA unit for each service. **Methods:** At an academic medical center, we used billing and clinical data from Jan-July 2018 to measure productivity and economic impact for each service. Additionally, each service was classified as a NORA or OR specialty. Comparisons were conducted with two-tailed, unpaired t-tests with a *P* value <0.05 denoting significance. **Results:** Data for all services with NORA and OR locations are shown in orange and blue, respectively (Figure 1). There were was no significant difference in productivity ($P = 0.47$) or economic impact ($P = 0.24$). However, when GI data is excluded as as outlying NORA producer, NORA locations generated significantly less productivity ($P = 0.02$) while financial impact remained similar compared with OR sites ($P = 0.27$; Figure 2). **Conclusions:** Most NORA locations generate less productivity for anesthesia groups than do traditional OR suites with the exception of GI. The economic impact, defined as net collections per ASA unit, remains similar across OR and NORA locations. The opening of new NORA locations requires a discussion about financial losses, benchmarking of the individual NORA services, and an alternative funds flow.[3] **References**: 1.

Abouleish Anesth Analg 2003;96(3):802-812.
2.
Hudson Anesthesiol Clin 2018;36(2): 143-160.
3.
Tsai MH, J Med Syst 2017;41(7): 112.
Figure 1. Bubble plot of economic impact and productivity by OR or NORA service. The size of the bubble represents the total net collections for that service for the time period studied. Blue circles, OR services; orange circles, NORA locations.
Figure 2. Bubble plot of economic impact and productivity by the OR and NORA service when summed up collectively from the separate data shown in Figure 1. The size of the bubble represents the total net collections for that service for the time period studied. Blue circles, OR services; orange circles, NORA locations.
Figure 3. Bubble plot of economic impact and productivity by OR and NORA services summed up as in Figure 2; however, this excludes GI from the NORA data. The size of the bubble represents the total net collections for that service for the time period studied. Blue circles, OR services; orange circles, NORA locations.







Abstract Body2: As anesthesia services continue to increase in non-OR anesthesia (NORA) locations, it is important to understand how they perform when compared to their OR counterparts. Although NORA locations have similar net collections/ASA Unit, they produce significantly less ASA Units/Day with the exception of GI.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM26
Poster Board Number:	01
Topic 1:	1.4 Research in Perioperative Management
Publishing Title:	Effect of Operating Room Staff Call-Offs on First Case Start Efficiency

Author Block: **C. Molzahn**[1], E. E. Lebovitz[2], S. M. Littwin[2];
[1]Department of Anesthesiology and Perioperative Medicine, Univeristy of Pittsburgh Medical Center, Pittsburgh, PA, [2]Pittsburgh, PA.

Abstract Body: Introduction: Operating room costs represent a significant portion of overall healthcare expenditures and labor costs account for a significant portion of the overall operating room budget. A recent JAMA Surgery article by Childers et al showed that OR time cost roughly $34-35/min with direct labor costs accounting for 1/3 of that costi. Because of the significant revenues and expenditures associated with OR time, significant emphasis is placed in today's environment on operating room efficiency including scheduling, staffing and minimizing delays. An optimal staffing ratio would be one that would provide enough redundancy to account for call-offs and urgent schedule changes without excessive numbers of non-utilized anesthesia and operating room staff. Our hypothesis was that on days in which increasing numbers of staff called off of an originally scheduled shift without a replacement, we would see a decrease in the number of ORs that would be able to run that morning. Methods: We attempted to analyze the staffing ratio at a large, urban, academic medical center by analyzing first case start data as a function of staffing call offs. Over a 6 month period in 2018 we analyzed the number of anesthesiologists, anesthesiology residents, CRNAs, RNs and surgical technicians that called in sick for any particular day. Using Microsoft Excel, we calculated the number of OR locations running at 0730 (Run) divided by the number that were originally scheduled to run (Scheduled) giving us the % Run/Scheduled. We plotted this number as a function of the # of call offs by position and analyzed the data using simple linear regression. Results: We found no statistically significant correlation between the number of total call offs (attendings, residents, CRNAs, RNs or surgical technicians) nor the number of call offs in any one category and the % of operating rooms Running / Scheduled to Run. The data was non-linear with r2 values of 0.01-0.05, meaning our call-off model explained nearly none of the be variance in the data. Discussion: This work shows that in our large, academic medical center call-offs are not correlated with having to close previously scheduled first-start operating rooms. This may imply that there is redundancy in our staffing model that could be reduced as a cost-saving measure. This work has

limitations of methodology and scope that are ripe for further exploration. Our data looked at total absolute number of call-offs and did not look at call-offs as a % of staffing scheduled for that day. We also looked at total rooms being run and did not account for any small delays that staffing constraints may have caused. Possible explanations for our findings include the fact that Level 1 trauma centers must have inherent staffing redundancy in order to safely manage trauma, urgent and emergent cases. Previous studies by Lebovitz, Hudson et alii in our department have shown a correlation between call burdens and productivity metrics because of these built in redundancies in staffing. Another possible explanation includes the ability to mobilize additional staffing in a large department such as ours. Further studies should attempt to qualify whether having excess staffing (at an increased cost) is justified by improving first start percentages which and reduces OR delays and increases efficiency, therefore increasing hospital revenues.

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Data collected over 6 months in our large, urban, academic medical center shows that operating room staff call-offs are not correlated with closures of previously scheduled first-start operating rooms.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM23
Poster Board Number:	01
Topic 1:	1.1 Quality Improvement
Publishing Title:	**Creation of an anonymous resident reporting system to identify significant peri-operative events to enhance resident education, improve patient safety, and identify factors requiring quality improvement.**
Author Block:	**J. Skanchy**, C. M. Stypula, J. R. Basarab-Tung, R. M. Fanning; Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University, Stanford, CA.
Abstract Body:	**BACKGROUND** Near-miss and adverse events are unfortunate occurrences in medical practice. To reduce the frequency of such events, it is imperative to identify issues and provide constructive feedback and education for residents and attendings. M&M conferences are often used to disseminate such information; however, this method is often too infrequent and narrow to capture all significant reportable events. Traditional efforts to share reportable events are often limited by concerns about confidentiality & medicolegal risks. We targeted these limiting factors in our resident-led QI project by implementing a reporting system that allows residents to anonymously report significant peri-operative events. Events are gathered, discussed, analyzed, and disseminated to our residents & department by our newly formed House Staff Quality and Education Committee. **METHODS** Initial efforts focused on overcoming administrative and legal barriers to establishing this reporting system. To navigate these barriers, we worked closely with select faculty in our department, Risk Management, Privacy Office, our institution's legal counsel & attorney, and the GMEC. We also surveyed and had extensive discussions with our residents on their preferred method of reporting and learning. **RESULTS** 1. Reports are entered into a password protected website, and gathered by Qualtrics into our institution's protected database. 2. Close collaboration with Risk Management and the Privacy Office ensured reports were compliant with HIPPA and Institution's policies. 3. On our institution's legal counsel, we used California Business Code 1157 to form a peer review committee (the House Staff Quality & Education Committee) to protect our findings from any forced disclosure. 4. We worked with Stanford's GMEC to guide us on creating this peer review committee, which they now use as a model for other departments. 5. Anesthesia residents form a key element of our peer review committee that

Abstract Body2:

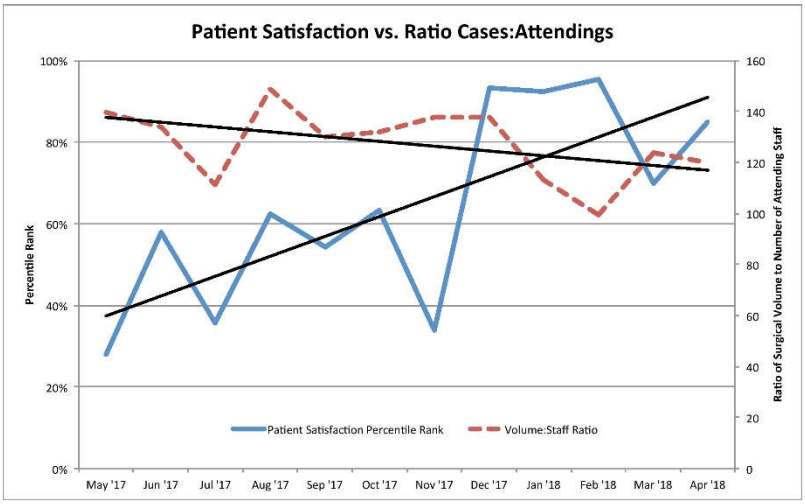
identifies which reported events require further action, intervention, and education. This peer review committee reports to our department's Medical Education and Quality, Effectiveness, and Patient Safety Committees. Our findings are disseminated to our residents via bimonthly newsletters, quarterly M&M meetings with each residency class, and quarterly dinners sponsored by the department.

DISCUSSION For a training program to provide excellent patient care & promote resident education, it is essential to provide avenues that promote peer-to-peer education and learning. Residents rarely use institutional error reporting systems due to perceived ineffectiveness of the process or fear of retaliation. When residents are afforded safe environments and opportunities to share peri-operative incidents and associated learning points, they bolster each other's educational experience, create a social interface to boost morale, and improve patient care by avoiding future adverse patient outcomes. While sharing and discussing reported events throughout our department can provide effective and efficient changes, we also recognize that there are inherent risks with such activities that need to be accounted for. Such procedures need to balance patient privacy & medicolegal risks with the benefit and utility of improving patient safety and resident education.

To reduce the frequency of adverse peri-operative events and enhance resident education, we created a resident reporting system that identified significant peri-operative events. The reported events are gathered, discussed, analyzed, and disseminated to our residents & department by our newly formed House Staff Quality and Education Committee. Our system goal in this new QI project is to bolster resident's educational experience, create a social interface to boost morale, and improve patient care by avoiding future adverse patient outcomes.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM13
Poster Board Number:	01
Topic 1:	1.1 Quality Improvement
Publishing Title:	Do Attending Anesthesiologist Staffing Levels Correlate with Patient Satisfaction?
Author Block:	**K. Shebaclo**[1], A. H. Elsayes[2], D. M. Drzymalski[3], R. J. Azocar[4]; [1]Department of Anesthesiology and Perioperative Medicine, Tufts Medical Center, Boston, MA, [2]Framingham, MA, [3]Boston, MA, [4]Tufts Medical Center, Boston, MA.
Abstract Body:	**Background:** Patient satisfaction is an important index for quality across healthcare. With regards to anesthetic care, patients may be strongly influenced by their brief experience prior to administration of anesthesia and/or during recovery. We hypothesized that a larger number of available attending anesthesiologists relative to case load (cases:attending ratio) would improve patient satisfaction. **Methods:** A retrospective study was conducted at an academic center in Boston, MA. The following data related to the preceding one-year period were retrieved: 1) Monthly scores from Press Ganey surveys pertinent to patients' satisfaction with their anesthetic and surgical care. These scores addressed explanations by the anesthesiologist, demeanor of the anesthesiologist, and overall rating of the care provided. 2) The mean number of attending anesthesiologists available month-to-month, derived from the daily available anesthesiologists during that same month (identified through our staff scheduling software). 3) The number of cases that received anesthetic care every month. To obtain a ratio of cases to attendings, the number of monthly cases was divided by the mean number of attending anesthesiologists available during the same month. These findings were then plotted against the percentile rank obtained from the survey results. Over the study period, we compared trends in staffing ratios to patient satisfaction. **Results:** The monthly case:attending ratio (i.e. cases/attending/month) demonstrated a downward trend. The lowest and highest values ranged from 99.5 to 148.6, respectively. The percentile rank for patient satisfaction with anesthesia demonstrated an upward trend (Figure 1). Surgical satisfaction scores remained the same. These findings signified an inverse relationship between case:attending ratio and patient satisfaction. **Discussion:** There are several plausible explanations for the observed association. Given the relatively limited amount of time available, a lower case:attending ratio may allow for greater time to be dedicated to preoperative interaction per individual patient. The same concept may also apply to intraoperative care and management of postoperative complications. In fact,

multiple studies have demonstrated that intraoperative complications (i.e. pain, inadequate hypnosis) and postoperative complications (i.e. nausea/vomiting, sore throat) had a significant negative impact on patient satisfaction. A lower case:attending ratio may also allow for dedicated staffing of satellite areas and perioperative services such as the recovery area and the acute pain (regional block) service. This may permit more time to be allocated per individual patient across all phases of care as well as lower geographical distraction. Again, this may translate to higher quality anesthetic care, both subjectively (patient perception) and objectively (less frequent and better managed complications). While the CMS and ACGME do impose certain staffing limitations, the optimal case:attending ratio for an anesthesia department is yet to be established. This will likely vary tremendously based on patient population, case acuity, length and turnover, clinical areas, weekend/overnight coverage, and the presence of anesthesia trainees. Our study is limited by not addressing these variables. The potential for higher patient satisfaction and quality of care is desirable, but optimization of staffing ratios and costs is needed in the face of the ongoing financial challenges that plague our healthcare system.



Abstract Body2:

Patient satisfaction is an important aspect of high quality health care. Our retrospective study suggests that a higher number of attending anesthesiologists available relative to case load may translate into better patient satisfaction. This may be due to greater time allocated per individual patient. Staffing ratios must be tailored to an individual practice's needs and optimized to avoid incurring unnecessary costs while delivering high quality anesthetic care.

Session Number:	P01
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 9:00 am - 9:30 am
Presentation Number:	PM18
Poster Board Number:	03
Topic 1:	1.1 Quality Improvement
Publishing Title:	Merging Practice Management, Resident Education & Quality Improvement!

Author Block: **M. Helou**[1], S. Abouhassan[2], M. Popovich[3];
[1]University Hospitals Cleveland Medical Center, Lyndhurst, OH, [2]Pepper Pike, OH, [3]University Hospitals Cleveland, Cleveland, OH.

Abstract Body: **Background:** Managing an Academic Practice consists of aligning faculty and resident goals with departmental needs. Well intentioned faculty need development on the subjects of teaching and project management in order to be effective educators who are able to complete fruitful projects within their department. The Stanford Anesthesia Faculty Teaching Scholars Program increased pedagogic training of faculty thereby improving resident education(1) and increased teamwork between residents and faculty on QI tasks. We extended this strategy by aligning our faculty development with a thorough *Resident Driven* Needs Assessment. **2. Objectives:** Our study aims to align Faculty Development QI projects with a formal *Resident Driven* Needs Assessment to simultaneously maximize benefit to the faculty, residents and department. **3. Methods:** A needs assessment was conducted via a series of formal feedback sessions between residents, Associate Program Director and Program Director. To eliminate potential group dynamics that can affect feedback Program Leadership met with residents individually to review specific concerns. Chief residents met with each residency class separately. To eliminate potential power differential, a peer volunteer resident from anther specialty was recruited through our GME office to conduct a feedback session with our residents. Internal departmental, GME and ACGME surveys were reviewed to look for areas for improvement and results were reviewed with residents. Multiple ACGME letters were reviewed to identify recurrent themes and high priority items identified by the residents. Based on the reviewed data, fifteen focus areas were identified. The focus areas fell under the general umbrellas of Education, Financial Accountability, Team Building, Leadership & Wellness. Each item was developed into a project for a "Faculty & Resident team". Faculty were paired with a resident, given a $2,500 stipend, dedicated time away from clinical duties, as well as both internal and external conference attendance opportunity. The goal for all teams was a deliverable, tangible program improvement for the residency as well as an opportunity to present at an educational meeting. Teams were built via a formal matching system. Faculty chose the top three project areas of interest as well as

Abstract Body2:

three potential teammates; residents did the same. Program Leadership then manually matched the candidates with their top choices. All residents and faculty expressed satisfaction with their assignments. Faculty and Resident satisfaction was measured with surveys in the beginning, middle and end of the projects. Projects were staggered in start times and varied in length between 6 months and one year. **4. Results/Outcomes/Improvements:** Statistical analysis of surveys at the mid-point showed improvement in both faculty and resident satisfaction. End point survey analysis is still pending. Initial data shows that three main positive outcomes resulted. Residents report satisfaction knowing their top priority concerns are being addressed. Faculty felt the Program and Department were investing in their development by providing structured direction to make contributions meaningful. Finally faculty efforts were used in a very concerted and organized manner both for their own development *and* meet ACGME and departmental needs. **5. Significance/Implications/Relevance:** Faculty Development, when highly organized, can be used to strengthen program deficiencies, engage residents by making them feel valued with needs addressed and also help meet departmental needs.

Managing an academic practice involves aligning faculty, resident and departmental goals on the same trajectory. This can be efficiently accomplished by mapping out faculty development initiatives to address primary resident concerns and departmental QI efforts. The UH Teaching Scholars Program provides faculty with a stipend, non-clinical time, one onsite conference and one off site conference in return for a deliverable that provides quality improvement to both the residency and the department. Project areas are identified via a needs assessment of the residency and are overseen by the Program Director.

Session Number:	P02
Session Title:	Practice Management 2019 ePosters
Location:	Connection Center
Session Time:	Saturday, January 19, 2019, 3:00 pm - 3:30 pm
Presentation Number:	PM24
Poster Board Number:	02
Topic 1:	1.3 Challenging Cases and their Innovative Solutions in Practice Management
Publishing Title:	Analyzing Closed-Loop Anesthetic Systems as Disruptive Solutions

Author Block: **S. Shah**;
David Geffen School of Medicine at UCLA, Los Angeles, CA.

Abstract Body:
Background: The field of anesthesiology has earned a reputation as the leading medical industry in patient safety through decades of iterating guidelines, standardization, and implementing novel technology. Due to this success, the market demand for anesthesia continues to outpace supply as non-operative candidates are now able to be safely anesthetized, but the overhead costs of supplying anesthesia service has not decreased. Numerous examples exist of service-based industries decreasing overhead cost by implementing technology and automation. The purpose of this paper is to argue that closed-loop anesthetic delivery technologies provide the means to lower cost and and deliver higher efficiency anesthetic delivery for the low cost anesthesia market. Methods: The field of anesthesia was examined through the lens of Clayton Christensen's theory of disruptive innovation. A market analysis of anesthesiology delivery for ASA 1 and 2 cases was completed using Business Source Complete with keywords including "anesthesia", "expense", "cost", and "Medicare." A literature review was also completed on Pubmed with keywords including "anesthesia", "closed-loop", and "survival". Results: Anesthesia has reached a six-sigma level of safety in patients of ASA 1 and ASA 2 status. As a result, 1:1 medical doctor (MD) to patient anesthesia delivery creates over-capacity for the performance required by surgeons and patients for ASA 1 and 2 patients undergoing low or intermediate risk surgery. Closed-loop anesthesia systems are roughly 10% of the current cost of delivering anesthesia compared to either an MD or a mid-level anesthesia professional. Closed-loop systems introduced in the past for the purpose of colonoscopy and esophagogastroduodenoscopy procedures faced significant resistance by anesthesiologists for market entry, resulting in its eventual failure. A new strategy is needed for the reintroduction of closed-loop anesthetic systems. The function of these machines should be to supplement current providers of anesthesia to meet supply:demand gap for anesthesia services rather than serve as replacements. These systems could serve the low cost market, namely low-risk patients undergoing low-risk surgery,, in which profit margins may be narrower than more complex cases. This transition would allow MD anesthesiologists to focus resources to the higher complexity end of the market

Abstract Body2:

where the extra service capacity could be spent in perioperative care of patients complex cases.
Conclusion: Closed-loop anesthetic delivery systems are potential disruptive solutions to the current high-cost, high-performance industry of anesthesia. The level of performance required by patients of ASA 1 and ASA 2 status is able to be fulfilled by these closed-loop systems. By integrating these systems into the current industry of anesthesia, MD anesthesiologists would be able to better serve the higher complexity end of the market.
Despite anesthesiology becoming the leading medical industry in patient safety, the field continues to have growing costs. Through the lens of Clayton Christensen's theory of disruptive innovation, the current providers of anesthesia have surpassed the performance required by its customers. Specifically, patients of ASA 1 and ASA 2 status should be able to have their anesthetic services fulfilled through the more cost-effective closed-loop anesthetic delivery systems. These systems would disrupt the less complex end of the market allowing MD anesthesiologists to focus on the perioperative care of patients with complex cases.