ORAL PRESENTATIONS

OR01
POSTOPERATIVE MOBILISATION GOALS REMAIN HARD TO ACHIEVE WITHIN AN ENHANCED RECOVERY PROTOCOL
Fabian Grass¹, Basile C.-E. Pache², David Martin¹, Valérie Addor³, Dieter Hahnloser¹, Nicolas Demartines¹, Martin Hübner¹
¹Department of Visceral Surgery, Lausanne University Hospital - CHUV, ²Department of Visceral Surgery, Lausanne University Hospital CHUV, ³Lausanne University Hospital - CHUV, Lausanne, Switzerland

Objectives: Enhanced Recovery After Surgery (ERAS) guidelines advocate early postoperative mobilisation to counteract catabolic changes due to immobilisation and maintain muscle strength through the perioperative period. The present study aimed to assess compliance to postoperative mobilisation according to ERAS recommendations.

Methods: All consecutive colorectal surgical procedures treated within an established ERAS protocol between May 2011 and May 2017 were retrospectively reviewed. Demographics, surgical details, ERAS related items and surgical outcome were compared between ambulant patients (at least 6 hours out of bed at postoperative day (POD) 1) vs. patients not meeting the target. Risk factors for decreased postoperative mobilisation were identified through multivariate logistic regression.

Results: 1170 patients with complete datasets for the present analysis were included. 676 patients (58%) were not able to mobilise as recommended by ERAS protocol at POD1. Emergency operation (Odds Ratio (OR) 0.40; 95% Confidence Interval (CI)0.18-0.91, p=0.028), age > 70 years (OR 0.69; 95% CI 0.47-1.00, p=0.050) and intraoperative total fluids > 2000 mL (OR 0.59; 95% CI 0.37-0.93, p=0.025) were independent risk factors for delayed mobilisation. Patients with delayed mobilisation had significantly more overall (Clavien grade I-V) (55 27 % vs. 29%, p=<0.001), major (Clavien grade IIIb-V) (16% vs. 7%, p=<0.001) and respiratory (12% vs. 4%, p=<0.001) complications, as well as longer length of stay (12±14 vs. 6±7 days, p=<0.001).

Conclusion: More than half of patients were not able to mobilise as recommended by ERAS guidelines at POD 1. Emergency surgery, advanced age and fluid overload were independent risk factors for delayed mobilisation, which was associated with increased postoperative complications.

Disclosure of Interest: None Declared
FLUID ADMINISTRATION AND SURGICAL OUTCOMES AFTER PANCREATODUODENECTOMY: EXTERNAL VALIDATION OF VARIABLE FLUID REGIMENS AT A TERTIARY REFERRAL CENTER

Marta Sandini1, Carlos Fernandez-Del Castillo1, Cristina R. Ferrone1, Katarina J. Ruscic1, Matthias Eikermann1, Andrew L. Warshaw1, Keith D. Lillemoe1, Motaz Qadan1

1Surgery, Massachusetts General Hospital, Boston, United States

Objectives: Intraoperative fluid overload is associated with higher complication rates, prolonged hospitalization, and delayed recovery after major abdominal surgery. However, data following pancreatoduodenectomy (PD) are scarce and heterogeneous. In a single cohort of PD patients from a tertiary referral center, we validated prior definitions of restrictive and liberal fluid regimens and analyzed whether they affected surgical outcomes.

Methods: Studies comparing outcomes after pancreatic resections in patients who received standard vs. overload, restricted vs. overload, or restricted vs. standard intraoperative fluids were retrieved. Anesthetic records of PD patients were analyzed for intraoperative fluid administration and surgical outcomes retrieved from a prospective database. The relative risk (RR) for each outcome was calculated for the reported infusion regimens.

Results: Anesthetic data were available for 506 PDs. The median intraoperative fluid volume was 4250mL (3000-5500mL), with a median infusion rate of 10.2mL/kg/h (8.2-13.2mL/kg/h), and a 7:1 ratio of crystalloid to colloid administration. Nine cut-off values reported in previous studies were validated. Two regimens used total intraoperative volume cutoffs of <4000mL vs. >5000mL and <6000mL vs. >6000mL. The remaining 7 regimens evaluated various infusion rates, ranging from 5-15mL/kg/h. Total volume administration >6000mL and >5000mL were associated with an increased overall complication rate [RR 1.25 (1.09-1.44) and RR 1.17 (1.01-1.35), respectively] and >6000mL with increased sepsis [RR 2.14 (1.04-4.42)]. Conversely, restrictive fluid regimens of <5mL/kg/h increased the risk of pancreatic fistula [RR 3.16 (1.06-9.41)] and sepsis [RR 3.20 (1.08-9.53)]; <6mL/kg/h was related to increased major morbidity [RR 1.64 (1.01-2.68)] and sepsis [RR 2.27 (1.02-5.07)], and <8mL/kg/h was associated with higher risk of pancreatic fistula [RR 2.16 (1.08-4.32)]. No fluid regimen-related effects were observed on pulmonary complications, surgical site infections, length of stay, or mortality.

Conclusion: Variable restrictive and liberal intraoperative fluid infusion volumes and rates had limited effects on surgical outcomes following PD, except at extreme restrictive and liberal values. Current recommendations for restrictive regimens require further validation following pancreatic resection.

Disclosure of Interest: None Declared
Objectives: Carbohydrate loading is one of the preoperative components of Enhanced Recovery After Surgery (ERAS) for colorectal surgery. Its purpose is to modulate stress response to surgery and decrease postoperative insulin resistance. However, the effects of hyperglycemia and delayed gastric emptying in diabetic patients have been raised. Consensus on its application in diabetic patients has yet to be reached. We report our experience on the use of preoperative carbohydrate loading in diabetic patients within an ERAS programme for elective colorectal surgery.

Methods: Data prospectively collected in the ERAS Interactive Audit System (EIAS) for diabetic patients undergoing elective colorectal surgery in a tertiary hospital in Singapore from March 2016 to August 2017 was analyzed retrospectively. Outcomes of diabetic patients who received carbohydrate preloading were compared to those who did not receive preloading. The primary outcome measure was postoperative complication rates. Secondary outcomes were peak glycemic levels and the need for insulin in the pre, intra, and post-operative periods.

Results: A total of 303 elective colorectal surgeries were performed. 75 patients (24.4%) were diabetics, of which, 54 (72.9%) diabetic patients were given preoperative carbohydrate loading, while it was omitted in the remaining 20 based on the surgeons’ discretion (mean HbA1c: 7.1% vs 7.8%, p=0.189). There was no difference in complication rates (38.9% vs 30.0%, p=0.591) comparing diabetic patients given carbohydrate preloading and those who did not. In addition, mean peak glycemic levels pre-op (11.0mmol/L vs 9.7mmol/L, p=0.218), intra-op (11.2mmol/L vs 11.6mmol/L, p=0.687), and within 24 hours post-op (14.0mmol/L vs 14.4mmol/L, p=0.734) as well as insulin requirements during those respective phases were not significantly different (p=0.453; 0.457; 0.429).

Conclusion: From our experience, the use of preoperative carbohydrate loading is safe in diabetic patients. There is no significant difference in postoperative adverse outcomes, as well as peak glycemic levels and insulin requirements in the pre, intra and postoperative periods between diabetic patients who received preoperative carbohydrate loading and those who did not.

Disclosure of Interest: None Declared
Effect of Four-Week Multimodal Prehabilitation on Sleep Quality, Fatigue and Depression Symptoms in Patients Approaching Pancreatic Surgery

Jason M. George¹, Martin B. Whyte², David G. King³, Michael J. Scott¹, Timothy A. Rockall¹
¹Minimal Access Therapy Training Unit (MATTU), Royal Surrey County Hospital, ²Dept Clinical & Experimental Medicine, ³Surrey Human Performance Institute, University of Surrey, Guildford, United Kingdom

Objectives: Depressive symptoms, including poor sleep, are common in patients approaching major surgery. Poor sleep can predispose to insulin resistance, which in turn is associated with postoperative inflammatory complications [1]. Exercise appears to improve sleep and mental health over a period of 12 to 24 weeks. Data is lacking to support a shorter intervention time which is more realistic for surgical planning. This is a four-week multimodal intervention, in patients awaiting major pancreatic surgery.

Methods: Eleven patients listed for pancreatic resection, for benign or cancerous disease, were enrolled. The four-week prehabilitation intervention comprised: resistance and high intensity interval training x3/week and daily omega-3 fatty acids (2g) and 30ml extra virgin olive oil. At baseline and after four weeks, subjective sleep quality, fatigue levels and depression symptoms were measured using: Pittsburgh Sleep Quality Index (PSQI), Karolinska Sleepiness Scale (KSS), Visual Analogue Scale for Fatigue (VAS-F), Brief Fatigue Inventory (BFI) and WHO-5 Well-Being Index (WHO-5). Sleep behaviour was quantified using 30-second epoch wrist actigraphy. Insulin sensitivity was measured with hyperinsulinaemic-euglycaemic clamp.

Results: Global sleep quality scores did not improve (PSQI: \( P = 0.518 \); KSS: \( P = 0.450 \) – paired t-test). There was also no significant difference in actigraphy-related parameters after four weeks (\( P > 0.05 \)). Fatigue and energy levels were unchanged (VAS-F, \( P = 0.358 \); BFI, \( P = 0.140 \)). Depression symptom scores improved following prehabilitation (WHO-5: \( P = 0.003 \)). A negative correlation was identified between PSQI scores and insulin sensitivity, post-prehabilitation (\( r = -0.834 \), \( P = 0.00143 \); Spearman’s rank correlation coefficient).

Conclusion: Prehabilitation was associated with improvement in depression symptoms. After prehabilitation, a correlation between sleep quality and insulin sensitivity was observed. However, four-week multimodal prehabilitation did not influence sleep quality in this cohort. Further work is needed to identify whether exercise in this time-frame can improve insulin sensitivity independent to changes in sleep quality.

References: [1] Sato, H. et al JCEM 2010; 95(9):4338-4344

Disclosure of Interest: None Declared
THE EFFECTS OF BETA-BLOCKER THERAPY ON EARLY MORTALITY FOLLOWING EMERGENCY COLON CANCER SURGERY

Rebecka Ahl¹, Peter Matthiessen¹,², Xin Fang³, Yang Cao¹,³, Gabriel Sjölin¹,², Rickard Lindgren², Olle Ljungqvist¹,⁴, Shahin Mohseni¹,²

¹School of Medical Sciences, Örebro University, ²Department of Surgery, Örebro University Hospital, Örebro, ³Institute of Environmental Medicine, ⁴Department of Molecular Medicine and Surgery, Karolinska Institutet, Stockholm, Sweden

Objectives: Emergency surgery for colorectal cancer is associated with significant morbidity and mortality. Adrenergic hyperactivity induced by major surgery is thought to be an important contributor and has previously been linked to an increased risk of death. This study assessed the use of regular beta-blocker therapy in patients requiring emergency surgery for colon cancer and its effects on 30-day post-operative mortality.

Methods: This cohort study utilized the prospectively collected Swedish National Quality Registry for Colorectal Cancer Treatment to identify all adults (≥18 years) requiring emergency surgical treatment for colon cancer between 2011 and 2016. Information about beta-blocker therapy was obtained from the national drugs registry of Sweden. Patients were subdivided into beta-blocker positive and negative groups. Risk factors for 30-day mortality was evaluated using Poisson regression analysis.

Results: A total of 3187 patients were included of which 685 (21.5%) used regular beta-blockade pre-operatively. The overall mortality rate was significantly reduced in the beta-blocked group compared to the control group: 3.07% (95% confidence interval [CI]: 1.91 - 4.65) vs. 8.63% (95% CI: 7.56 - 9.80), P <0.001, respectively. Beta-blocker therapy was the only protective factor identified in a multivariate analysis for 30-day all-cause mortality (incidence rate ratio 0.31, 95% CI: 0.20 - 0.47, P <0.001) and showed a significant reduction in deaths of cardiovascular, respiratory, sepsis and multi-organ failure origin.

Conclusion: Beta-blocker therapy is associated with a significant risk reduction in 30-day mortality following emergency surgery for colon cancer.

Disclosure of Interest: None Declared
OR06
IMPACT OF A RESTRICTIVE INTRAOPERATIVE FLUID REGIMEN ON THE INCIDENCE OF POSTOPERATIVE ACUTE KIDNEY INJURY (AKI) WITHIN AN ENHANCED RECOVERY AFTER SURGERY (ERAS) PROGRAM.
Paul Drakeford¹, Shu Qi Tham¹, Jia Li Kwek¹, Aruni Seneviratna², Jonathan Tan¹
¹Anaesthesiology, ²Clinical Research Unit, Tan Tock Seng Hospital, Singapore, Singapore

Objectives: The consensus statement for anesthesia practice published by the ERAS group recommends a perioperative near-zero fluid balance (3 ± 2ml/kg/hr). The ERAS program for colorectal patients was implemented at our tertiary institution in 2016, however there is ongoing concern about AKI in the setting of major surgery, pneumoperitoneum and restrictive fluid administration. We performed a retrospective medical record review to examine whether a more restrictive fluid regimen was associated with an increased incidence of AKI.

Methods: We reviewed all consecutive laparoscopic anterior resections (LAR) performed between 2016 and 2017. We excluded LARs that involved extended operations, such as liver resections, and with blood loss more than 300mls. We compared patients who received ≤3mls/kg/hr with those who received >3mls/kg/hr of intraoperative fluids. Preoperative serum creatinine (SCr) was compared to SCr on postoperative days 1 and 2, and the KDIGO criteria were used to determine the occurrence and stage of AKI. Data was analysed using Stata.

Results: There were 216 patients who underwent an uncomplicated LAR with minimal blood loss in 2016 and 2017. There were 104 patients in the ≤3mls/kg/hr group vs 112 patients in the >3mls/kg/hr group. A significantly higher proportion of patients given ≤3mls/kg/hr fluid volume developed AKI compared to those given >3mls/kg/hr of intraoperative fluids (10.6% vs. 1.8%, p = 0.008). However, after adjusting for differences in age and preoperative SCr between the groups, AKI was no longer significant among patients given ≤3mls/kg/hr fluid volume (AOR 4.11, 95% CI 0.84–20.03). Preoperative SCr was a significant predictor of AKI (AOR 1.02, 95% CI 1.01–1.04). Of the 13 cases of AKI, 11 were classified as Stage 1 AKI and 2 as Stage 2 with SCr returning to baseline within 5 days in all of these cases.

Conclusion: This retrospective medical review of colorectal patients within an ERAS program did not show a significant increase in AKI incidence among patients given ≤3mls/kg/hr of intraoperative fluids compared to a more liberal fluid regimen.

Disclosure of Interest: None Declared
ENHANCED RECOVERY AFTER ROBOTIC ASSISTED RADICAL CYSTECTOMY LIMITS THE NEGATIVE IMPACT OF SARCOPENIA ON POSTOPERATIVE OUTCOMES

Pavlos Pavlakis¹, Panagiota Alexopoulou², Somita Sarkar¹, Murthy Kusuma¹, Dimitrios Moschonas¹, Chris Jones²,³, Alison Roodhouse¹, Matthew Perry¹, Krishnaji Patil¹, Tim Rockall⁴
¹Urology, ²Anaesthesia, ³SPACeR Group, Surrey Perioperative Anaesthesia and Critical Care Collaborative Research Group, Royal Surrey County Hospital NHS Foundation Trust, ⁴Department of Surgery, Royal Surrey County Hospital NHS Trust, and Minimal Access Therapy Training Unit, Guildford, United Kingdom

Objectives: Sarcopenia is gradual muscle wasting associated with aging that also occurs with cancer. Recent studies have shown that sarcopenia is associated with longer hospital stay post-surgery and poor prognosis due to the correlation of frailty with low muscle mass (MM). Our aim was to evaluate whether the psoas muscle mass can predict the length of hospital stay (LoS) or readmission to hospital within 90 days (D90) post robotic assisted radical cystectomy (RARC) with Enhanced Recovery (ERAS) Protocol.

Methods: Analysis of prospectively collected perioperative data of patients that underwent RARC and extracorporeal urinary diversion between 2013 and 2018 in a tertiary referral centre was performed. All patients followed a multimodal ERAS protocol. Muscle mass was assessed by measurement of the psoas muscle area in cm² at the level of lumbar L3 vertebrae on the pre-operative cross-sectional CT scan using DICOM and sliceOmatic software. Logistic regression was used to estimate psoas MM as predictor of LOS or readmission to hospital within 90 days post-surgery (D90).

Results: Total of 165 patients in our RARC data registry had complete radiological data available for analysis. The median (range) LOS was 5 (3-24) days and a D90 readmission rate of 15%. The median (range) psoas MM was 21.2 (10.9-32.2) and 19.7 (4.6-39.6) cm² in patients with a LOS ≤5 and ≥6 days respectively. This represented a borderline significant increase of 5% in the odds of a LOS ≤5 days per unit increase in psoas MM (p=0.08). Psoas MM was not predictive of D90 readmission (p=0.8).

Conclusion: Our data suggest that psoas MM is not a strong predictor of LOS or hospital readmission rates after RARC with ERAS protocol. Further research is required to clarify if preoperatively identified sarcopenic patients could benefit from a prehabilitation program and targeted perioperative nutritional interventions as part of individualised ERAS pathway.


Disclosure of Interest: None Declared
OR08
FLUID RESPONSIVENESS IN THE POSTOPERATIVE PERIOD: A PROSPECTIVE STUDY IN NON-CRITICALLY ILL PATIENTS
Silvia Cicala¹, Enrico M. Minnella¹, Elyana Wohl³, Sergio Cocimano¹, Sheldon Magder², Gabriele Baldini¹, Daniel Gottesman*³
¹Anesthesiology, ²Critical Care, McGill University, ³Department of Anesthesia, McGill University Health Center, Montreal, Canada

Objectives: The incidence of Fluid Responsiveness (FR) in non-critically ill surgical patients and the proportion of patients in whom Stroke Volume (SV) significantly increases after a bolus of intravenous fluids (Volume Expansion, VE) are unknown after surgery. Although being Fluid Responder (FRer) does not necessarily imply being hypovolemic, it remains to be determined whether postoperative FR is associated with complications. This prospective study aims to determine 1) the incidence of FR in postoperative patients, 2) if postoperative FR is associated with and predicts 30-day complications, 3) the proportion of patients in whom SV significantly increases after VE.

Methods: Patients undergoing major thoracic or abdominal surgery, not requiring intensive care unit admission, and treated with a surgery-specific Enhanced Recovery Program were enrolled (NCT02418663). FR was assessed soon after surgery, and daily for the first 48 h. SV was measured with the ccNexfin® before and 1 min after a fluid challenge (FC) with 250 ml of Lactated Ringer's over 5 min. During the day FR was also assessed “on call” when VE was clinically deemed. Patients were considered fluid responders (FRer) if SV increased at least by 15% either 1 min after the FC or the VE.

Results: FR after a FC was present in 52 over 172 patients (30.2%). Complications occurred in 53.8% of FRer and in 45% of non-FRer (Relative Risk, RRcrude = 1.19, 95% Confidence Interval, CI=0.86 to 1.64, p-value=0.286; RRAjusted =1.08, 95%CI=0.68 to 1.70, p-value=0.719). After controlling for confounders (age, duration of surgery, intraoperative blood loss, volume of intravenous fluids and postoperative negative fluid balance) FR was not an independent predictor of complications (Odds Ratio, ORcrude =1.16, 95%CI=0.68 to 2.01, p-value=0.579; ORAjusted=0.98, 95%CI=0.42 to 2.26, p-value=0.965). Among 15 patients who required VE only 4 (26.7%) were FRer.

Conclusion: Thirty-percent of non-critically ill surgical patients are FRer after surgery. After controlling for confounders, FR is not associated with and it does not predict 30-day complications. VE performed on the basis of clinical parameters rarely determine a significant increase of SV and might be potentially harmful.

Disclosure of Interest: None Declared
Objectives: Several retrospective series reported an increased hazard of postoperative infection in patients with hyperglycemia. No prospective studies evaluated the kinetic and predisposing factors of high blood glucose (BG) as potential risk of infection. The primary hypothesis was that the risk of infection was dependent from the kinetic of postoperative hyperglycemia and its persistence over time. The secondary endpoints were to recognize potential pre- and intra-operative determinants of high BG after operation.

Methods: From January 2016 through October 2017, candidates for major abdominal operations were recruited and followed up for 30-day after hospital discharge. Diabetic patients, or with fasting blood glucose level >125 mg/dL, were excluded. BG level was measured at admission, during operation and every four hours for 4 consecutive days. Hyperglycemia was defined as any episode of glycaemia > 125 mg/dL. Insulin was administered when BG was > 180 mg/dL. To test the primary hypothesis we used the Rizopoulos joint model for longitudinal and time-to-event outcome [1] to assess the association between the time-trend of the intra-postoperative BG levels and incidence of infections, adjusting for pre-intra-operative covariates.

Results: 452 patients were enrolled in 4 centers. According to the joint model, the hazard of infection increased by 0.65% for each repeated escalation in BG level of 10 mg/dL during the time of observation (HR: 1.065, 95%CI: 1.001-1.113, P=0.045). Other risk factor for infection were contamination of the surgical field (HR: 1.752, 95%CI: 1.004-3.059, P= 0.048), blood loss (HR: 1.128, 95%CI: 1.015-1.236, P=0.025, and duration of surgery > 3 h (1.841, 95%CI: 1.140-2.975, P=0.025). At the multivariate analysis the only determinant of postoperative hyperglycemia was the BG level at admission (OR=1.283 for every 10 mg/dL increase; 95%CI: 1.067-1.544; p=0.008).

Conclusion: The risk of infection appearance seems affected by the degree and persistence of hyperglycemia. These data may provide important insights on when, and in whom glucose monitoring should be enforced for a target therapy.


Disclosure of Interest: None Declared
OR10
RISK FACTORS FOR DELAYED GASTRIC EMPTYING AFTER PANCREATICODUODENECTOMY AND NEED FOR ENTERAL FEEDING ACCESS IN THE ERAS® ERA
William B. Lyman1, Michael Passeri2, Russell C. Kirks1, Allyson Cochran2, John B. Martinie2, Dionisios Vrochides2, Erin H. Baker2, David A. Iannitti2
1Department of Surgery, 2Division of HPB Surgery, Carolinas Medical Center, Charlotte, United States

Objectives: Current ERAS® guidelines for pancreaticoduodenectomy (PD) do not support prophylactic intraoperative feeding tube placement during PD. Much debate remains between hepatopancreaticobiliary (HPB) surgeons regarding optimal timing and utility of feeding tubes for PD. This study was designed to determine any identifiable risk factors in patients undergoing PD under ERAS® protocol that may increase the risk for developing delayed gastric emptying (DGE) - possibly identifying patients that may benefit from an intraoperative prophylactic feeding tube for nutritional supplementation.

Methods: We retrospectively analyzed all patients collected prospectively in the EIAS database who underwent PD at our institution since the implementation of ERAS® in September 2015 (n=126). Using a combination of literature review (PubMed) and expert consensus within our division, we identified 11 variables which could possibly contribute to DGE and subsequent need for feeding tube placement. (Table 1) We used ISGPS Definition of Grade B or C DGE as a clinically relevant occurrence (n=34, 27.0%). STATA® statistical software and Pearson’s chi-squared test were used for all statistical analyses.

Results: Preoperative symptoms of gastric outlet obstruction as well as history of chronic pancreatitis significantly correlated with development of Grade B/C DGE and subsequent need for postoperative feeding tube (p=<0.001 and 0.014 respectively). (Table 1) Of the 31 patients who received an intraoperative feeding tube, only 11 patients (35.5%) developed grade B/C DGE requiring enteral supplementation.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>No DGE (n=92)</th>
<th>Grade B/C DGE (n=34)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric Outlet Obstruction</td>
<td>2</td>
<td>7</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Chronic Pancreatitis</td>
<td>7</td>
<td>8</td>
<td>0.014</td>
</tr>
<tr>
<td>Irreversible Electroporation</td>
<td>12</td>
<td>2</td>
<td>0.256</td>
</tr>
<tr>
<td>Neoadjuvant Chemotherapy</td>
<td>24</td>
<td>4</td>
<td>0.180</td>
</tr>
<tr>
<td>Neoadjuvant XRT</td>
<td>5</td>
<td>1</td>
<td>0.571</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>68</td>
<td>21</td>
<td>0.184</td>
</tr>
<tr>
<td>Preoperative Weight Loss</td>
<td>61</td>
<td>23</td>
<td>0.887</td>
</tr>
<tr>
<td>Concomitant Vascular Resection</td>
<td>12</td>
<td>3</td>
<td>0.516</td>
</tr>
<tr>
<td>Intraoperative IVF&gt;3000cc</td>
<td>46</td>
<td>19</td>
<td>0.558</td>
</tr>
<tr>
<td>Preoperative Opiate Use</td>
<td>32</td>
<td>13</td>
<td>0.720</td>
</tr>
<tr>
<td>Diabetes</td>
<td>27</td>
<td>9</td>
<td>0.751</td>
</tr>
</tbody>
</table>

Conclusion: While we agree with current ERAS® Society guidelines against routine placement of intraoperative feeding tubes during PD, we propose that patients presenting with symptoms of gastric outlet obstruction or those with a history of chronic pancreatitis may benefit from intraoperative placement of an enteral feeding tube because of the high risk for developing postoperative Grade B or C DGE.

Disclosure of Interest: None Declared
EVALUATING THE IMPACT OF SPECIFIC COMPLIANCE ITEMS OF AN ENHANCED RECOVERY AFTER SURGERY (ERAS®) PROTOCOL IN PANCREATICODUODENECTOMY PATIENTS

Allyson Cochran 1, William B. Lyman 1, Michael Passeri 1, Kendra Tezber 1, Misty Eller 1, Erin Baker 1, John Martinie 1, David A. Iannitti 1, Dionisios Vrochides 1

1 HPB Surgery, CAROLINAS MEDICAL CENTER, Charlotte, United States

Objectives: Compliance adherence in an ERAS® program has been shown to reduce complications. While most studies look at overall or aggregated compliance groups in colorectal surgery, studies have yet to demonstrate the relationship between which specific compliance elements contribute to better outcomes in PD (pancreaticoduodenectomy) surgery.

Methods: Post-ERAS implementation PD data from a single institution was collected from the ERAS® Interactive Audit System from September 2015-October 2017 (n=128). In-hospital and 30-day post-discharge measures were combined to create overall 30-day complication measures, which included: delayed gastric emptying (DGE) A-C, Clavien grade of 3+, survival, length of stay (LOS), readmission, and pancreatic fistula (PF) B-C. Itemized compliance elements were binary. Linear and logistic regression were performed as appropriate; reported as coefficient and odds ratio, respectively. Significance was set at p<.05.

Results: Oral supplements on day of surgery reduced the odds of DGE (OR=0.31, p=.028), while duration of IV fluids increased the odds for DGE (OR=1.2, p=.001) and Clavien grade 3+ complication (OR=1.13, p=.013). A patient had 11 times the odds of survival if PONV prophylaxis was given (OR=11.3, p=.039). Preadmission education (-4.8, p=.046), postoperative compliance adherence (-0.24, p=.005), and total compliance adherence (-0.30, p=.016) were inversely associated with LOS. There were no significant predictors for readmission and PF. Though not statistically significant, postoperative compliance (OR=0.95, p=.063) and preadmission patient education (OR=0.29, p=.066) were highly suggestive for reducing DGE, and postoperative epidural anesthesia (OR=7.5, p=.054) and postoperative compliance (OR=1.2, p=.056) for contributing to 30-day survival.

Conclusion: These results show that not only do aggregated compliance measures contribute to better patient care in PD patients, but that the specific pathway items are meaningful as well. Further, this study highlights that a variety of pathway items are significant contributors, which suggests that reducing or consolidating elements in an ERAS® protocol could perhaps be detrimental to patient outcomes.

Disclosure of Interest: None Declared
Objectives: To compare clinical and economic outcomes after colectomy in ERAS hospitals against trends in matched hospitals without ERAS. ERAS outcomes in high-volume specialty centers are well described, but uptake beyond such institutions is limited in the US. Studies have rarely differentiated the effects of ERAS from unrelated trends in perioperative care. In a statewide surgical collaborative actively promoting ERAS adoption, we evaluated implementation across a diverse set of hospitals, using an econometric approach to control for trends unrelated to ERAS.

Methods: Using statewide data from the Michigan Surgical Quality Collaborative (outcomes registry) and Michigan Value Collaborative (episode-based claims registry), we identified hospitals that adopted ERAS programs for colectomy. We matched them against non-ERAS hospitals, according to bed size, teaching status, and case-mix-index. Using difference-in-differences (DID) analysis, we compared trends in clinical outcomes and payments after colectomy between ERAS and control hospitals.

Results: Of 72 hospitals, 16 (22%) had full ERAS programs. Pre-implementation outcomes and trends were not different in ERAS and non-ERAS hospitals (length of stay [LOS] \( p=0.53 \), readmissions \( p=0.15 \)). Overall, average postoperative LOS declined by approximately 1 day, with no difference in trends between ERAS and non-ERAS hospitals (DID=\(-0.04\) days, \( p=0.92 \)). Among patients without complications, however, there was a significantly greater decrease in LOS in ERAS hospitals (DID=\(-0.87\) days, \( p=0.04 \)). Total episode payments decreased similarly in ERAS (US$34,078 to US$32,886) and non-ERAS (US$36,840 to US$35,408) hospitals (DID=US$240, \( p=0.83 \)). There was greater increase in post-discharge spending among ERAS adopters, but this difference was not statistically significant (DID=US$937, \( p=0.08 \)).

Conclusion: Despite increasing consensus around the value of ERAS, adoption in US hospitals remains slow. Even accounting for temporal trends, ERAS adoption is associated with shorter LOS, provided that complications are avoided. Achieving shorter LOS did not require increases in total spending, but attention must be paid to the potential for increased spending on post-discharge care after shorter hospital stays. To match the superior outcomes described among specialty ERAS centers elsewhere, Michigan hospitals may need increased support for structured implementation and audit.

Disclosure of Interest: None Declared
Objectives: The prevention of postoperative pulmonary complications (PPC) is targeted by several enhanced recovery (ERAS) items including early mobilisation, prevention of fluid overload and omission of routine nasogastric tubes. The aim of the present study was to assess the impact of ERAS on PPC.

Methods: Retrospective analysis of an institutional database including consecutive colorectal ERAS procedures from May 2011 until May 2017. Multiple logistic regression was performed to identify risk factors for PPC among demographic, surgical characteristics and items related to the ERAS protocol.

Results: In total, 1298 patients were included, among them 120 (9.2%) had one or more PPC. Multivariable analysis retained minimally invasive surgery (Odds Ratio (OR) 0.26; 95% Confidence Interval (CI) 0.15-0.46) and compliance to the ERAS protocol of ≥ 70% (OR 0.53; CI 0.30-0.94) as protective factors. Emergency surgery (OR 2.70; CI 1.20-6.01), blood loss of ≥ 200 mL (OR 2.06; CI 1.20-3.53) and ASA score of ≥ 3 (OR 2.00; CI 1.12-3.57) were independent risk factors. Median length of hospital stay was significantly longer in patients who experienced respiratory complications (21 [4-183] vs. 6 [1-95] days, p=<0.001).

Conclusion: Minimally invasive surgery and high compliance with the ERAS protocol can help to prevent PPC.

Disclosure of Interest: None Declared
THE INTRODUCTION OF THE ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOL IN A TERTIARY CENTRE IMPROVE THE POST-OPERATIVE OUTCOMES AFTER GYNAECOLOGIC SURGERY: A CASE CONTROL PRELIMINARY STUDY.

Alessandro Buda* 1, Mauro Gili2, Maria E. Sparacino2, Luca Montanelli1, Federica Dell’Orto1, Luca D’Andrea2, Stefania Palmieri1, Federica Brunetti1, Chiara Fornasari2, Filippo Testa1, Barbara Cambiaghi3, Debora Verri1, Marco Adorni1, Matteo Frigerio1, Paolo Passoni1, Sonia Magni1, Giampaolo Di Martino1, Claudio Reato1, Fabio Landoni1, Giuseppe Foti2
1Obstetrics Gynecology, 2Anesthesiology, San Gerardo Hospital, University Milano-Bicocca, Monza, 3Anesthesiology, AO San Gerardo di Monza, Monza, Italy

Objectives: To evaluate the impact of introducing an Enhanced Recovery After Surgery (ERAS) protocol, on the main post-operative outcomes and complications following gynecologic surgery.

Methods: Thirty women underwent abdominal hysterectomy with or without salpingo-oophorectomy for malignant or benign indications with either minimally invasive or open surgery between July and December 2017, were compared with 28 consecutive pre-ERAS patients who had undergone the same surgery between January and July 2017, just before establishing the ERAS protocol (n = 58).

Results: No differences were recorded in terms of ASA score (0.130), main associated morbidity (0.545), surgical technique (MIS vs open; p value=0.511), and intraoperative blood loss (0.518) between the ERAS and pre-ERAS groups, respectively. An early mobilization, catheter removal, and food and fluid intake was significantly faster achieved in ERAS group compared to pre-ERAS patients. The length of stay was reduced after the introduction of the ERAS program from a median of 3 days (range 1-11) to a median of 2 days (range 1-19) (p = 0.001). The proportion of patients discharged at 2 days after surgery was significantly increased from 42% pre-ERAS to 57% after introduction of ERAS (p = 0.0012). No differences were found in complications rate (6% vs. 3%) in primary stay, or within 30 days after discharge. One re-operation was required in the ERAS group (3% vs. 0%), and readmission occurred in 7% vs. 3% in ERAS and pre-ERAS, respectively.

Conclusion: In our preliminary experience after the introduction of the ERAS program in our Departments for gynecologic surgery including abdominal hysterectomy reduced the length of stay and has an impact on the main post-operative outcomes of patients. Finally we observed an increased global welfare of women during the hospitalization.

Disclosure of Interest: None Declared
ENHANCED RECOVERY PATHWAY FOR NON-COMPLICATED PEDIATRIC APPENDICITIS UTILIZING A SINGLE DEDICATED PRE- AND POST-OPERATIVE UNIT

Angela Kao1, Tanushree Prasad1, Trudy L. Marks2, Labron Chambers3, B T. Heniford1, Graham H. Cosper4
1General Surgery, 2Levine Children’s Hospital, 3Anesthesia, 4Pediatric Surgery, Carolinas Medical Center, Charlotte, United States

Objectives: Few pediatric studies have utilized a standardized protocol that adopts components from the enhanced recovery after surgery (ERAS) bundle. This study evaluated the implementation of a standardized enhanced recovery pathway for non-complicated pediatric appendicitis in a 240-bed children’s hospital.

Methods: A multidisciplinary team identified areas for improvement, including preoperative education, standardized antibiotic prophylaxis, urinary catheter utilization, multimodal analgesia, early mobilization and feeding, and nursing-initiated discharges. A designated pre- and post-operative unit for patients was created adjacent to the OR. ERAS patients were compared to a historical cohort prior to implementation in June 2017.

Results: Ninety-five patients (37 ERAS, 58 control) with non-complicated appendicitis underwent laparoscopic appendectomy from 06/2016-01/2018. Demographics/operative times were statistically similar. Compared to pre-ERAS patients with variable antibiotics, ERAS patients received standard dosing of 3rd generation cephalosporin/metronidazole in 78.3% (vs. 12.1%, p<0.0001). Intraoperative urinary catheters decreased from 43.1% to 19.1% (p<0.05) and use of multimodal analgesia decreased IV narcotic use from 86.2% to 56.7% (p<0.02). Nurses facilitated ambulation and feeding within 2 hours after surgery in all ERAS patients. Thirty-three of 37 patients (89.2%) were discharged from the recovery room either within 8 hours (67.5%) or immediately after rounds. Mean total hospital LOS decreased from 27.9±15.8 to 15.9±8.1 hours (p<0.0001). Postoperative LOS was also reduced (20.1±11.9 vs. 8.2±4.9 hours, p<0.0001), with no difference in complications or readmissions. Compared to 100% of pre-ERAS patients, only two ERAS patients (5.4%) chose office follow-up; the remaining 35 (94.6%) received follow-up via nursing telephone calls at 24 hours and 7 days after discharge.

Conclusion: Initiation of an ERAS protocol for pediatric patients with non-complicated appendicitis significantly reduces total hospital and postoperative LOS. Other benefits include standardization of antibiotic use, earlier mobilization and decreased narcotic use. Creation of a designated physical unit for pre- and post-operative patients greatly facilitates these goals. Research into the enhanced recovery appendicitis protocol remains ongoing along with other common surgical diagnoses.

Disclosure of Interest: None Declared
OUTCOMES IN COLORECTAL SURGERY AT REINA SOFIA CLINIC, BOGOTA, COLOMBIA, AFTER THE IMPLEMENTATION OF THE ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOL

Eduardo Zarate1, Angela Navas* 2, Arnold Barrios3, Alvaro Sarmiento1, Jairo Betancourt1, Fredy Mendivelso3, Vivian Pineda4, Jessica Arias5, Luis A. Cortes6 on behalf of Reina Sofia Clinic ERAS Group

1Anesthesiology, 2Surgery, Reina Sofia Clinic, 3Epidemiology, COLSANITAS Clinics, 4Nursery, Reina Sofia Clinic, 5Anesthesiology, UNISANITAS, 6Scientific Direction, Reina Sofia Clinic, Bogota, Colombia

Objectives: In February 2016, the Enhanced Recovery After Surgery (ERAS) protocol for management of the colorectal surgery patients, was implemented at Reina Sofia Clinic of Bogota, Colombia. As a member of the ERAS Society, this institution is one of the first 3 centers in Latin-America to fully implement the ERAS Program. The aim of this audit was to evaluate the impact on the ERAS Program in our institution on patients’ outcomes after elective colorectal surgery.

Methods: 108 consecutive ERAS Program patients (ERAS) who underwent elective colorectal surgery from February 2016 to December 2017 were analyzed from the prospectively-maintained database ERAS Interactive Audit System® (EIAS). They were compared with a retrospective data of 50 elective colorectal surgery patients also included in the EIAS database (pre-ERAS).

The primary endpoints were compliance to the ERAS protocol, post-operative length of stay and readmissions; and the secondary endpoint, post-operative complications.

Results: Based on the accomplishment of 29 ERAS Protocol elements contained in the EIAS database, the global rate of compliance increased from 29% (pre-ERAS) to 84% (ERAS). Mean and median length of stay decreased from 8.1 to 5.9 days and from 5 to 4 days respectively (p = 0.014) without increase in the readmissions rate (12% [pre-ERAS] vs 8.3% [ERAS]). Overall complications rates decreased from 48 to 31.7% but there were no differences in the incidence of serious complications (10 vs 8.3%), as well as in the rate of re-interventions (8.3 vs 8%). We found a reduction in the incidence of anastomotic leaks from 14% (pre-ERAS) to 6.5% (ERAS) (p=0.048), and in the rate of post-operative ileus (12% [pre-ERAS] vs 6% [ERAS]) (p=0.013).

Conclusion: The augmented adherence to the strategies conceived in the colorectal surgery ERAS protocol in our institution, was associated with reduced length of stay, overall complications, anastomotic leaks and post-operative ileus. Therefore, the adoption of ERAS protocol results in improved patient outcomes and should be considered as standard of care in this group of patients.

Disclosure of Interest: None Declared
MULTIMODAL REHABILITATION PROTOCOL FOR RADICAL CYSTECTOMY: ROLE OF SURGICAL NURSING AND CLINICAL IMPLICATIONS

Anna Sabadell¹, Carmen Galian¹, Dolores Garcia², Marta Corcoy³, Gloria Nohales⁴, Lluís Cecchini⁴, Montserrat Sitges¹
¹Surgical Nurse, ²Surgical support, ³Anesthesiology, ⁴Urology, Hospital del Mar, Barcelona, Spain

Objectives: Patients undergoing a radical cystectomy (RC) are treated by a multidisciplinary team that in the operating room includes surgical nursery, urologist and anaesthesiologist. The use of an ERAS protocol intends to achieve an integral attention care in order to improve the assistance quality and to reduce surgical-related morbidity. Patient prehabilitation allows decrease some anaesthesic aggressive technics and improve hemodynamic patient behaviour during surgery, decreasing unwanted effects.

The aim of the study is to describe the role of surgical nursery in an ERAS program in patients undergoing RC in Hospital del Mar and evaluate the changes in assistance quality, transoperative times and morbidity.

Methods: We retrospectively reviewed the informatized data of the RC done in Hospital del Mar from 2013 to 2017. The application of ERAS in Hospital del Mar started in 2015. We collected data from a control group (n=50), who underwent RC without the application of the ERAS protocol and a case group (n=50), who underwent RC with ERAS protocol.

We observe and compare the anesthesia time and the surgical time in both groups.

Results: Prior to the surgical procedure, the involvement of the surgical nurses consisted in the participation in the urological service sessions to prepare the surgical procedure, the coordination of the support team into the standardized preparation of the operating room, and to coordinate and assist the anesthesiologist in the application of the enhanced prehabilitation protocol during the transoperative process knowing the patient presurgical conditions.

During surgery, role of surgical nursery is to assist the urologist as well as to trying to reduce the team workload, regardless of the protocol used.

After comparing ERAS group and non-ERAS group we observed a minimal decrease in anesthesia time. On the other hand, we didn’t found a statistical differences in surgical time when comparing both groups.

Conclusion: The coordinated work by the surgical nursing under an ERAS protocol results in better organization of the surgical procedure, and a better control of surgical risks. Thus, there is an improvement in the use of surgical resources, as well as an increase in team satisfaction. Nevertheless, it did not result in a clinically significant reduction of anesthetic or surgical time.

Disclosure of Interest: None Declared
P005
IS THERE A ROLE FOR PRELOADING PATIENTS WITH GABAPENTIN IN ENHANCED RECOVERY FOR LAPAROSCOPIC NEPHRECTOMY?

Antony Ratnasingham 1, Tom Gill 2, Katrine Thorup 3, Wendy Caddye 2, Paul Smith 2, Despoina Liotiri 2
1 Anaesthetics, Guys and St Thomas Hospital, London, 2 Anaesthetics, Brighton and Sussex NHS Trust, Brighton, 3 Anaesthetics, East Sussex NHS Healthcare Trust, Eastbourne, United Kingdom

Objectives: To evaluate the use of gabapentin preloading in reducing post-operative pain, opioid use and time to mobilise, in comparison with conventional analgesia in patients undergoing laparoscopic nephrectomy.

Methods: Notes of 72 patients who underwent laparoscopic nephrectomy between November 2016 and January 2018 at Brighton and Sussex University Hospital (UK) were reviewed. Any elective laparoscopic radical or partial nephrectomy in our enhanced recovery programme was included. Open procedures, whether planned or converted to open, were excluded. Data collected included details of anaesthesia, analgesia requirements in the first 48 hours, pain scores, gabapentin dosage and length of stay. The decision to administer gabapentin, and the dose prescribed were at the discretion of the senior anaesthetist treating the patient.

Results: 33 patients received gabapentin pre-operatively while 39 patients did not. In the gabapentin group there was a 30% reduction in mean opioid requirements over 2 days post operatively (53.3mg vs 76.4mg), and lower post-operative pain scores. There was also a reduction in the mean length of stay in the gabapentin group (3 days vs 3.6 days).

Conclusion: Gabapentin preloading may reduce opioid consumption and length of stay in laparoscopic nephrectomy, and should be considered as an adjunct. This also corresponds with some studies that found a reduction in pain scores with gabapentin versus none 1-2. This may have a pivotal role given the growing evidence that opioids may worsen cancer recurrence rates. This preliminary data is promising, but further research is required in larger studies. This leads us to believe that gabapentin may have a significant role to play enhanced recovery pathways for laparoscopic nephrectomies.


Disclosure of Interest: None Declared
Objectives: In February 2016, the Enhanced Recovery After Surgery (ERAS) protocol for management of the colorectal surgery patients, was implemented at Reina Sofia Clinic of Bogotá (Colombia), South America. The adoption of the ERAS Program has demonstrated improved patient outcomes after surgery and savings in medical costs. This study was designed to analyze the net financial impact in our institution after implementing the ERAS Program. Methods: The key variables considered were the annual cost of registering the program in the prospectively-maintained database ERAS Interactive Audit System® (EIAS), the cost of an annual full time of a nurse dedicated to the Program, reduction in total length of stay and per day reduction of direct variable costs from decreased length of stay. As explained in a previous study, estimation of cost savings based on direct variable costs alone, leads to the most conservative estimate of cost savings. These costs represent potential savings from decreasing the use of certain material and services such as laboratory, pharmacy, radiology and respiratory care. Results: From February 2016 to September 2017, 91 consecutive ERAS Program patients (ERAS) who underwent elective colorectal surgery were analyzed from the prospectively-maintained database ERAS Interactive Audit System® (EIAS). They were compared with a retrospective data of 50 elective colorectal surgery patients also included in the EIAS database (pre-ERAS). Costs analysis are shown at the table.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS pre-ERAS, (d) mean</td>
<td>8.1</td>
</tr>
<tr>
<td>LOS with-ERAS, (d) mean</td>
<td>5.2</td>
</tr>
<tr>
<td>Reduction in LOS, (d)</td>
<td>2.9</td>
</tr>
<tr>
<td>Direct variable costs pre-ERAS/patient, (US$) mean</td>
<td>3,519</td>
</tr>
<tr>
<td>Direct variable costs with ERAS/patient, (US$) mean</td>
<td>2,311</td>
</tr>
<tr>
<td>Direct variable costs reduction/patient, (US$)</td>
<td>1,208</td>
</tr>
<tr>
<td>Total cost savings in 91 patients, (US$)</td>
<td>109,208</td>
</tr>
<tr>
<td>Costs of ERAS program (EIAS) (18 months), (US$)</td>
<td>11,250</td>
</tr>
<tr>
<td>Cost of full time ERAS nurse (18 months), (US$)</td>
<td>25,000</td>
</tr>
<tr>
<td>Net savings of ERAS program (91 patients), (US$)</td>
<td>72,958</td>
</tr>
</tbody>
</table>

LOS = length of stay; d = days; US$ = American dollars

Conclusion: In our study, we have demonstrated shortened of length of stay and substantial potential cost savings with the implementation of the ERAS Program in colorectal surgery patients. In comparison with developed countries, the savings numbers shown are significant for a health system maintained by subsidized and contributory regimens.

References: 1Crit Care Med 2013;41:717-24

Disclosure of Interest: None Declared
P007
ENHANCED RECOVERY PROGRAM IN GYNAECOLOGICAL SURGERY; PERSISTENCY OF COST-EFFICIENCY OVER TIME AFTER IMPLEMENTATION?
Basile C.-E. Pache† 1, 2, Gaëtan-Romain Joliat 2, Martin Hübner 2, Nicolas Demartines 2, Anne Huguenin 1, Patrice Mathevet 1, Chahin Achtari 1
1Department “Femme-Mère-Enfant”, 2Department of Visceral Surgery, Lausanne University Hospital - CHUV, Lausanne, Switzerland

Objectives: Enhanced recovery after surgery (ERAS) implementation has proven to reduce complication, duration of hospital stay and cost. Little is known about the sustainability of these results over time in gynaecological surgery. The aim of the present study was to assess the cost-efficiency evolution over the 4 years after implementation of an ERAS programme in gynaecological surgery. Comparison of running costs of ultimate year with patients treated before ERAS implementation was made to assess cost-efficiency of ERAS implementation.

Methods: Conducted as a retrospective study, the perioperative costs for 388 women undergoing gynaecological surgery (benign, staging or debulking) within an ERAS protocol were analyzed between 1 October 2013 and 31 December 2016 in a Swiss tertiary centre. Pre-ERAS patients were included from 9 October 2012 and 30 September 2013. Preoperative, intraoperative and postoperative real costs were collected for each patient via hospital administration. A bootstrap independent t-test was used for comparison.

Results: There were 42 patients in pre-ERAS group, 122 patients in 2014 (year 1 after implementation (AI)), 134 patients in 2015 (year 2 AI) and 90 patients in 2016 (year 3 AI). Preoperative characteristics and demographics were similar between all groups. The mean total costs per patient for the pre-ERAS group were USD18'772 (15'399-22'721). In 2014, the mean total costs were USD16'101 (14'649-17'533), in 2015 USD15'510 (13'981-17'162) and in 2016 USD13'398 (11'983-14'914). Comparisons of the 3 means (2014-2016) showed a significant difference (p=0.003). The mean total costs in 2016 were significantly decreased compared to 2014 (p=0.011).

Conclusion: Total costs decreased over time after implementation of ERAS in gynaecology, thus enhanced recovery program is sustainable on the long term.

Disclosure of Interest: None Declared
COST–BENEFIT ANALYSIS OF THE IMPLEMENTATION OF AN ENHANCED RECOVERY PROGRAM IN GYNAECOLOGICAL SURGERY
Basile C.-E. Pache 1,2, Gaëtan-Romain Joliat 2, Martin Hübner 2, Patrice Mathevet 1, Nicolas Demartines 2, Mona Schäeppi 1, Chahin Achtari 1
1 Department Women-Mother-Child, 2 Department of Visceral Surgery, Lausanne University Hospital - CHUV, LAUSANNE, Switzerland

Objectives: Enhanced recovery after surgery (ERAS) programmes have shown clinical benefits in numerous types of surgeries. Cost-effectiveness of such programmes has been demonstrated for abdominal surgery, but evidence remains scarce for gynaecological surgery. The aim of the present study was to assess the costs of an ERAS programme for gynaecological oncologic surgery compared to a group of patients treated before ERAS implementation.

Methods: Conducted as a retrospective study, the perioperative costs for 51 consecutive women undergoing gynaecological surgery (benign, staging or debulking) within an ERAS protocol were compared to the costs of 42 patients prior to implementation (started 3rd October 2013) in our tertiary centre. Preoperative, intraoperative and postoperative real costs were collected for each patient via hospital administration. A bootstrap independent t test was used for comparison. ERAS-specific costs were integrated into the model.

Results: Demographics and preoperative characteristics were similar between the pre-ERAS and ERAS groups. The mean total costs were USD14’128 (95% CI: 11’967-16’477) for the ERAS group and USD18’772 (15’399-22’721) for the pre-ERAS group (p=0.041). Preoperative and postoperative mean costs for the ERAS group (USD8’226, 7’001-9’715) were lower than for the pre-ERAS group (13’538, 10’367-17’293, p=0.015). Intraoperative costs were similar between both groups (ERAS: USD5’901, 5’133-6’746 vs. pre-ERAS: 5’234, 4’678-5’870, p=0.185). Subgroup analysis showed that nursing costs (mean difference: USD1’992, p=0.031) and intensive care unit costs (1’486, p=0.018) were significantly lower in the ERAS group. ERAS specific cost per patient where USD512. The final total gain per patient was USD4’132.

Conclusion: Implementation of ERAS in gynaecological surgery induced a significant decrease of overall costs.

Disclosure of Interest: None Declared
ENHANCED RECOVERY AFTER SURGERY PATHWAYS IN GYNAECOLOGICAL SURGERY DECREASES DURATION OF HOSPITAL STAY WITHOUT INCREASING READMISSION RATE

Basile C.-E. Pache1,2, Gaëtan-Romain Joliat1, Martin Hübner1, Fabian Grass1, Nicolas Demartines1, Patrice Mathevet2, Chahin Achtari2
1Department of Visceral Surgery, 2Department “Femme-Mère-Enfant”, Lausanne University Hospital - CHUV, Lausanne, Switzerland

Objectives: Enhanced recovery after surgery (ERAS) aims to reduce perioperative stressors and provide standardized pathways for clinical practice. ERAS has been shown to reduce length of hospital stay in various fields of surgery (colorectal, hepatobiliary), but evidence in gynaecology remains scarce. The aim of the present study was to assess the effect of ERAS implementation in gynaecological surgery on length of stay and readmission rate.

Methods: Retrospective analysis of a prospectively maintained database of women undergoing gynaecological surgery (benign, staging or debulking) within an ERAS protocol from 9 October 2013 to 31 December 2016. Results were compared with a case-matched group before implementation (pre-ERAS) from 3 October 2012 to 30 September 2013 in a Swiss tertiary centre. Perioperative items were prospectively collected on a daily basis into a dedicated database. Complications were graded according to Clavien-Dindo classification, with major complications defined as grade III-V.

Results: 445 women were included, with ERAS (n=403) and pre-ERAS (n=42) groups. Preoperative characteristics and demographics were similar in both groups. Overall, complications rate was not different between the two groups (25% (104/403) vs 29% (12/42), p=0.698). No differences were found for major complications rate (7.1% (3/42) vs 2.5% (10/403), p=0.088), reoperations rate (2.5% (10/403) vs 2.4% (1/42), p=0.968), neither for number of patients in Intensive Care Unit postoperatively: 9.4% (38/403) vs 19% (8/42), p=0.062). Median length of stay was significantly reduced in the ERAS group compared to pre-ERAS with 3 days (IQR 2-4) vs 5 (IQR 3-8), p<0.001. Readmission rates were similar in both groups (2.2% (9/403) vs 2.4%(1/42), p=0.951).

Conclusion: ERAS protocol in gynaecological surgery reduced length of stay without increasing readmissions.

Disclosure of Interest: None Declared
P010
DEXMEDETOMIDINE OR REMIFENTANIL AS PART OF MULTI-TARGET ANESTHESIA IN ELECTIVE COLORECTAL SURGERY: A RETROSPECTIVE ANALYSIS ON PATIENT OUTCOME AFTER FULLY IMPLEMENTED ERAS PROTOCOLS
Brenda Zoer*, Leense S Wagenaar¹, Annette F.T. Olieman², Bastiaan B. Pultrum², Hanneke van Kooten-Mosterd³, Henriette Smid Nanninga⁴, Anneke Tol Bueving², Hans Donald de Boer¹
¹Department of Anesthesiology, Pain Medicine and Procedural Sedation and Analgesia, ²Department of Surgery, ³PACU Nurse, ⁴ERAS Nurse, Martini General Hospital Groningen, Groningen, Netherlands

Objectives: Implementation of multidisciplinary approached ERAS programs results in a significant improvement of perioperative care and reduced length of stay (LOS). After full implementation of ERAS protocols (January 2017), we were able to reduce complications by more than 40% and to achieve a significant reduction in LOS. At implementing of full ERAS, a new multi-target anesthesia protocol was introduced with among others the use of either dexmedetomidine or remifentanil, based on the choice of the attending anesthesiologist. No epidurals were used. The objective of this retrospective analysis is to investigate whether the use of either dexmedetomidine or remifentanil contributes to a reduction in LOS, maximal NRS scores on the PACU and opioid intake during admission.

Methods: After approval of the Medical Ethical Committee, a search in our database system was performed (January-December 2017) for patients who underwent elective open or laparascopic colorectal surgery that received either dexmedetomidine or remifentanil as part of the new multi-target anesthesia protocol. Primary outcome measures were LOS, maximal NRS at the PACU and opioid use during admission. Patients with readmissions and reoperations within 30 days after the surgery were excluded from this study.

Results: Two-hundred-sixty-nine patients could be identified (male=145 (53.9%), female=124 (46.1%), age (years, mean and SD) of 67.5 ± 9.5. Eighty-eight (32.7%) of the patients received dexmedetomidine during surgery and 181 (67.3%) patients received remifentanil. LOS (days, mean and SD) for the dexmedetomidine group was 4.06 ± 2.83 and for the remifentanil group 4.41 ± 3.00 (p = 0.36). Patients receiving dexmedetomidine showed significantly less pain (highest NRS, mean and SD) at the PACU: 2.78 ± 2.36 vs 3.71 ± 2.57 (p < 0.01). Opioid use at the first three days after surgery was lower and statistical significant after day 1 in patients where dexmedetomidine was used (28.6% vs 44.8%; p = 0.014).

Conclusion: This observational study indicates that patients receiving dexmedetomidine compared with remifentanil, as part of a multi-target anesthesia protocol have a reduced LOS and better postoperative outcomes, illustrated by both significant lower pain scores and reduced opioid intake.

Disclosure of Interest: None Declared
ENHANCED RECOVERY AFTER SURGERY (ERAS) VERSUS FAST TRACK PROTOCOLS: ARE CLINICAL OUTCOMES DIFFERENT?

Davide Cintorino, Calogero Ricotta, Pasquale Bonsignore, Fabrizio di Francesco, Sergio Li Petri, Duilio Pagano, Alessandro Tropea, Salvatore Gruttadauria

1Department for the treatment and study of abdominal pathologies and abdominal transplants - Abdominal Surgery and Transplant Unit, ISMETT, Palermo, Italy

Objectives: Enhanced recovery after surgery (ERAS) is a multimodal patient-centered perioperative program to deliver to the patient high quality care and get better postoperative outcomes. Our Center deals with abdominal transplants and abdominal oncological surgery. Currently many studies compare ERAS or fast track protocols to traditional perioperative care. We investigated if there were differences (feasibility, clinical effectiveness, short-term outcomes) between Fast track (FT) and ERAS protocols in our Institute.

Methods: Data were collected from consecutive patients undergoing open and laparoscopic colorectal surgery during two time periods, before (FT program: September 2015- August 2016) and after (September 2016-august 2017) starting an ERAS protocol. Data collected included patient demographics, operative and perioperative surgical data, type of analgesics, complications, multidrug resistant bacteria (MDR) infections, length of stay (LOS), 30-day readmission.

Results: There were 76 patient in the FT group and 50 in the ERAS group. The median LOS was 7 days in the ERAS group compared with 9 days in the FT group (P >0.05). The reduction in LOS was not significant for both groups. There were no statistical difference for complications rate, 30-days re-admission (FT vs ERAS= 2.6 vs 2%). We found out an interesting data: ERAS patients had fewer MDR infections (4% vs 27%, P = 0.003).

Conclusion: In colorectal surgery, both FT and ERAS protocols are feasible, effective and have similar clinical outcomes, but we unexpectedly recorded that the ERAS group was associated with lower MDR infection rate than FT group. No other statistically different clinical outcomes were detected. This data has an important clinical impact especially because of MDR infections represent an important clinical issue after surgery and in transplant program centers. We have only there initial data but further studies are needed to confirm this analysis and to explain why ERAS pathways can be effective in reducing MDR infection.

Disclosure of Interest: None Declared
IMPLEMENTATION OF ‘DISCHARGE READINESS CRITERIA’ IN AN ENHANCED RECOVERY AFTER SURGERY (ERAS) PROGRAM: WHY IS A GREAT IDEA OFTEN NOT FEASIBLE?

Camila Corzo1, Maria D Iniesta1, Larissa A. Meyer1, Ashley Siverand1, Tina Suki1, Javier Lasala2, Pedro T. Ramirez1
1Gynecologic Oncology and Reproductive Medicine, 2Anesthesiology and Perioperative Medicine, University of Texas MD Anderson Cancer Center, Houston, United States

Objectives: Length of hospital stay is not always a direct correlate of a patient's readiness for discharge. The aim of this study was to identify barriers to implementation of a 'Discharge Readiness Criteria' policy in an Enhanced Recovery After Surgery (ERAS) program in patients undergoing gynecologic surgery.

Methods: 'Discharge Readiness Criteria' policy was established for all patients undergoing open gynecologic surgery from August 2016 through December 2017, under an ERAS program. Patients were asked to recall on five criteria for discharge each day of hospitalization for the prior day during hospital admission. All questions were asked and recorded by research or nursing staff. The criteria were: 1) ambulates 4 times a day, 2) tolerates 3 regular meals, 3) eats all meals sitting up on a chair, 4) does not require intravenous pain medication, and 5) voids without any issues.

Results: A total of 398 patients were evaluable for analysis. Of those, 168 patients (42.2%) had at least one of the 5 discharge readiness criteria missing, for at least one day. The primary reasons noted for the lack of feasibility in implementing this policy were: a) incomplete data recording on weekends, despite multiple educational meetings and weekly reminders to weekend personnel; b) data was recorded in different sources of patient information (paper form and medical record); c) information recalled by the patient often did not match that recorded by nursing staff; d) failure of nursing staff to keep daily records of criteria for discharge; e) daily change of nursing assignment to patients lead to inconsistent documentation; and f) data verification revealed erratic information. Only 'ability to void independently' and 'use of oral-only pain medication' were available from medical records, the remaining three items were inconsistently reported by nursing staff on a daily basis. There was no improvement noted in data completion even after numerable re-education meetings.

Conclusion: Implementation of 'Discharge Readiness Criteria' in our ERAS program was not feasible. Length of hospital stay continues to be the only measure of in-hospital recovery.

Disclosure of Interest: C. Corzo: None Declared, M. D. Iniesta : None Declared, L. Meyer Grant / Research support from: K07-CA201013, A. Siverand: None Declared, T. Suki: None Declared, J. Lasala: None Declared, P. Ramirez: None Declared
ONE-YEAR EXPERIENCE IMPLEMENTING ERAS PROGRAM IN A PUBLIC HOSPITAL IN WESTERN MEXICO.

Catherine Cabrera* 1 on behalf of Jorge Reynoso Betancourt, María Sofía Jiménez Chavez, José Ramírez Ramos, Rubén Rodríguez Barajas, Dr. Daniel Enciso Pérez

1 Coloproctologia, Hospital Civil Fray Antonio Alcalde, Guadalajara, Mexico

Objectives: Our objective is to present our experience after one year of the implementation of ERAS program in the Colorectal unit of the Guadalajara Civil Hospital Fray Antonio Alcalde in Mexico.

Methods: A retrospective study was carried out from March 2016 to March 2017. Data from the Audit system of ENCARE (EIAS), an ERAS Society subsidiary, was collected. A univariate and multivariate analysis was made of the most relevant variables.

Results: During the mentioned period, 32 patients were treated under ERAS protocol, 20 men (62.5%) and 12 women (37.5%), with an average age of 56.69 years (minimum 20 maximum 79). 100% of the patients had general education prior to hospital admission, stoma counseling. 90.6% (n 29) received oral carbohydrates 2 hours before the procedure, no bowel preparation was performed in 81.3% (n 26). All patients received antibiotic preoperatively and antithrombotic prophylaxis. The main surgical approach was Laparoscopic in 46.9% (n 15) of the patients, followed by open surgery 40.6% (n 13) and other (laparoscopy plus manual assistance and approach by stoma) 12.5% (n 4). Procedures for benign pathology were performed in 78.25% (n 25), predominating interventions related to stomas (n 10) and sigmoidal resection (9). 21.8% interventions for malignant cause (rectal resection and abdominoperineal resection). In 75.0% (n 24) a combined anesthesia of epidural block plus inhalated general anesthesia was performed, as well as the use of long-acting opioids prevailed during the transsurgical 53.1% (n17) followed by none in 31.3% (n10) and the amount of fluids infused was an average of 888 ml. The average hospital stay was 3.97 days (minimum 2 maximum 12), the complications observed in our patients were 12.5% anastomotic leak (n 4) and operative site infection 9.4% (n 3). In our patients, no mortality was reported.

Conclusion: The application of a multidisciplinary program favors an earlier recovery and faster hospital discharge, what makes the protocol feasible to recreate in our population. It is important to point out that our institution is a school hospital in addition to being in the learning curve which influences the complication rates most frequently observed.

Disclosure of Interest: None Declared
OBJECTIVES:
The Enhanced Recovery After Surgery – ERAS® - consists of a multidisciplinary and multimodal approach in the perioperative period of the patient to optimize clinical outcomes. The authors intend to compare the colorectal surgery performed by laparotomy (LT) vs. laparoscopy (LC) under ERAS® program.

METHODS: Retrospective study of 139 patients undergoing colorectal surgery (January-December 2017) under ERAS® program. Analysis carried out using ERAS® database program audit system. Of the 139 surgeries, 96 - LC, 42 - LT and 1 conversion. Excluded conversion surgery. In the LC and LT groups, a comparative analysis was done of the demographic characteristics, ASA, P-POSSUM, benign/malignant pathology, compliance with the ERAS® program, hospitalization time, oral diet initiation, intestinal motility stimulation, mobility, rate of complications Clavien Dindo≥III and mortality rate. The Mann Whitney test was applied to the variables selected by the authors.

RESULTS: Of the n=96, LC group, 84.1% were female, the median age was 70 years, ASA I/II – 72%, ASA III/IV – 21%, average P-POSSUM was 4.8% and diagnosis of benign/malignant disease in 42.9%/57.1%. Of the n=42, LT group, 77.4% were female, the median age was 72.5 years, ASA I/II – 73.8%, ASA III/IV 26.2%, average P-POSSUM was 7.0%, and diagnosis of benign/malignant disease in 20.8%/79.2%. The groups showed similar demographic characteristics, with a higher anesthetic and surgical risk in the laparotomy group. In both groups there was a predominance of malignant pathology. In the analysis of the remaining variables, we obtained a compliance with the ERAS® program of 75.3%(LT) vs 81.2%(LC) (p=0.42); median days of hospitalization of 6(LT) vs 4(LC) (p=0.51); initial liquid diet at post-surgery D0 47.6% (LT) vs 47.4% (LC) (p=0.93); stimulation of intestinal motility 66.7% (LT) vs 68.4% (LC) (p=0.87); post-surgery D0 mobility 66.7% (LT) vs 76.8% (LC) (p=0.47); Clavien Dindo≥III complication rate 16.7 (LT) vs 13.7% (LC) (p=0.97) – anastomotic leaks 4.8% (LT) vs 5.3% (LC) - and mortality rate 0% (LT) vs 1.1% (LC). The analysis of the selected variables did not show a statistically significant difference (p > 0.05) between the LT group and the LC group.

CONCLUSION: Despite the recognized advantages of laparoscopic surgery, the results presented support the relevance of the ERAS® program in improving perioperative care, namely, balancing clinical outcomes between LT and LC surgery.

Disclosure of Interest: None Declared
ENHANCED RECOVERY AFTER SURGERY (ERAS): TIME FOR MORE RELATIVES/CARER’S INVOLVEMENT?
Charlotte A. McGrath¹, Abozed Ben Sassi¹, Michael Thornton¹, Palanichamy Chandran¹
¹Colorectal Surgery, Wrexham Maelor Hospital, Wrexham, United Kingdom

Objectives: The overall aim of the study is to explore the experiences of the Enhanced Recovery After Surgery (ERAS) colorectal school education session from carer’s perspective and to discover if the current service at a District General Hospital is meeting the aims of ERAS. The strategies and principles of ERAS were used to inform the development of the objectives of the study. This focused on examining the current service provision of sufficient information for relatives/carers, their perceived involvement in the planning of care and support after discharge from hospital.

Methods: A systematic appraisal of current practice using service evaluation. Anonymous questionnaire piloted then completed by 24 carers of patients undergoing colorectal surgery on an ERAS programme and who attended the education session.

Results: All respondents reported a high satisfaction with the current service. Findings regarding the content and provision of the service were consistent with recommendations by the Department of Health (2010). Almost three quarters (67%) of carers felt that the ERAS aims and goals, highlighted in the educational sessions were achieved. Respondents also highlighted the importance of the quality of information provided (96%), overall care received (83%) and their involvement in the process (100%). It was identified that the content and provision of the current service was consistent with recommendations by DOH (2010) and NHS (2013).

Conclusion: It is claimed that ERAS uses patients and their families as an appropriate resource in planning and managing their own recovery and care (NHS, 2012). However, evidence of this and relatives’ perceptions and involvement in the process is limited. The findings of the study identified relatives and carers are integral to the successful outcomes of ERAS and the patients recovery, particularly following discharge from hospital. Health care professionals must be mindful of this and ensure that both the patient’s and their families need for information, support and guidance is achieved.

Disclosure of Interest: None Declared
OBESITY DOES NOT AFFECT LENGTH OF STAY, COMPLICATIONS OR READMISSION RATES IN A COMPREHENSIVE ERAS PROGRAMME FOR ROBOTIC RADICAL CYSTECTOMY

Chris Jones¹.², Leigh Kelliher¹.², Dimitrios Moschonas³, Pavlos Pavlakis³, Matthew Perry⁴, Krishna Patil³
¹SPACeR Group, Surrey Perioperative Anaesthesia and Critical Care Collaborative Research Group, ²Anaesthesia, ³Urology, Royal Surrey County Hospital, Guildford, United Kingdom

Objectives: Objectives: Previous studies have suggested a higher rate of complications in obese patients undergoing radical cystectomy [1], but at present there are no studies looking at these patients undergoing a comprehensive ERAS programme.

Methods: Methods: We performed a review of our prospectively maintained cystectomy database. All patients underwent robotic cystectomy with urinary diversion from 2013 until present and followed an established ERAS programme.

Results: Results: Data were available for 229 patients. 161 patients had a BMI (Body Mass Index) <30 kg/m²[mean 25.2] and 68 were defined as Obese [mean 33.2] – (of which 15 morbidly obese). There was no difference in length of stay between groups: 5 vs 6 days [p=0.09]; complication rates, 42% vs 39.7% [p=0.78]; readmission rates, 15.3% vs 14% [p=0.69]; blood loss 200mls vs 223 mls [p=0.32]; or operating time 391 mins vs 390 mins [p=0.82]. There was also no difference in mortality rates [2vs1].

Conclusion: Conclusions: Obesity does not appear to affect post-operative outcomes after robotic radical cystectomy in patients undergoing a comprehensive ERAS programme.


Disclosure of Interest: None Declared
DOES AGE EFFECT OUTCOME FOLLOWING ROBOTICALLY-ASSISTED RADICAL CYSTECTOMY(RARC) WITH AN ENHANCED RECOVERY PATHWAY (ERP)? - A RETROSPECTIVE ANALYSIS
Leigh Kelliher¹,², Chris Jones¹,², Dimitrios Moschonas³, Pavlos Pavlakis³, Matthew Perry³, Krishna Patil³
¹Anaesthesia, Royal Surrey County Hospital, ²SPACeR Group, Surrey Perioperative Anaesthesia and Critical Care Collaborative Research Group, ³Urology, Royal Surrey County Hospital, Guildford, United Kingdom

Objectives: Advances in surgical technique, perioperative care and oncology within the context of an ageing population are resulting in an increasing number of elderly patients becoming eligible for major cancer surgery. Such patients often have multiple co-morbidities and polypharmacy as well as the physiological changes that come with increasing age. The objective of this study was to see how age impacts outcome following RARC.

Methods: Retrospective review of the clinical records of 238 patients undergoing RARC with an ERP. Patients were divided by age into 4 groups and comparison of LOS and readmission rates was made between groups.

Results:

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>&lt;60</th>
<th>60-70</th>
<th>70-80</th>
<th>&gt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>33</td>
<td>73</td>
<td>106</td>
<td>26</td>
</tr>
<tr>
<td>mean LOS (days)</td>
<td>5.061</td>
<td>6.301</td>
<td>6.566</td>
<td>6.731</td>
</tr>
<tr>
<td>sd</td>
<td>2.179</td>
<td>3.985</td>
<td>3.777</td>
<td>3.118</td>
</tr>
<tr>
<td>readmission rate %</td>
<td>24.3</td>
<td>8.22</td>
<td>16.04</td>
<td>11.54</td>
</tr>
</tbody>
</table>

Comparison of LOS data with ANOVA $p=0.19$

Conclusion: Despite a trend toward an increasing LOS with age, there was no significant difference between groups for either LOS or readmission rates. Increasing age does not effect outcome in this setting and elderly patients are just as likely to benefit from surgery with an ERP.

Disclosure of Interest: None Declared
VOLUMES OF INTRATHECAL BUPIVICAINE IN PATIENTS UNDERGOING SURGERY FOR NECK OF FEMUR FRACTURE AND THEIR EFFECT ON INTRAOPERATIVE HYPOTENSION

Ciro Morgese¹, Caroline Moody¹

¹Department of Anaesthesia, Russells Hall Hospital, Dudley Group of Hospitals Foundation Trust, Dudley, United Kingdom

Objectives: Intraoperative hypotension in the context of surgery for neck of femur fracture is associated with higher morbidity and mortality. There is some evidence suggesting that intraoperative hypotension maybe associated with higher volumes of intrathecal bupivicaine.

The primary aim of this prospective observational study was to see whether there is an association between volumes of intrathecal bupivicaine and intraoperative hypotension.

The secondary aim was to investigate whether there is an association between volumes of intrathecal bupivicaine and the use intraoperative vasopressors.

Methods: Data were prospectively collected for 49 patients undergoing surgical repair for proximal femur fracture under subarachnoid anaesthesia. The sample was subdivided into a ‘High-dose’ group (≥1.5ml of bupivicaine, n=30) and a ‘Low-dose’ group (<1.5ml of bupivicaine, n=19), based on previous literature. Pre-spinal (baseline) and lowest intraoperative blood pressure recordings (systolic, diastolic, MAP) were used for the sake of the analyses. Differences between the mean blood pressure readings of the two groups were analysed with Mann-Whitney U-Tests. Chi-square and Fisher's exact tests were used to investigate differences between the two groups with regards to the occurrence of absolute or relative hypotension (defined as a systolic BP<90mm/Hg and a relative drop from baseline of >20%, respectively) and to look at differences in the use of vasopressors between the two groups.

Results: The mean lowest recorded MAP of the ‘High dose’ group was significantly lower compared to the mean of the ‘Low-dose’ group (65mmHg vs 71mmHg, respectively, p=0.036).

The number of patients who received vasopressors was higher in the ‘High-dose’ group compared to the ‘Low-dose’ group (21 vs 8 patients, respectively), but this difference only approached statistical significance (p=0.051).

Both, relative and absolute hypotension occurred more often in the ‘High-dose’ group compared to the ‘Low-dose’ group, but the differences were not statistically significant (23 vs 14, p=0.5; 9 vs 5, p=0.5, respectively).

Conclusion: Higher volumes of intrathecal bupivicaine (≥1.5ml) may be associated with worse intraoperative hypotension compared to lower volumes. Further research in the form of randomised dose-effect studies is needed to confirm our findings.

Disclosure of Interest: None Declared
IS INTRATHECAL DIAMORPHINE ASSOCIATED WITH A HIGHER QUALITY OF POST-OPERATIVE FUNCTIONAL RECOVERY AFTER LAPAROSCOPIC SURGERY? EVIDENCE FROM A PROSPECTIVE OBSERVATIONAL STUDY IN A COHORT OF COLORECTAL AND UROLOGY PATIENTS

Ciro Morgese*, Nahla Farid, Adam Hancox, Nadim Kozman, Michael Reay
1Department of Anaesthesia, Russells Hall Hospital, The Dudley Group of Hospitals Foundation Trust, Dudley, United Kingdom

Objectives: Our primary aim was to see whether the use of intrathecal diamorphine is associated with higher quality of postoperative functional recovery in a cohort of patients undergoing major laparoscopic colorectal or urological surgery.

Methods: We collected prospective data from 21 patients undergoing laparoscopic surgery. 13 patients received intrathecal diamorphine as part of their post-operative analgesia management (‘spinal’ group). Of these patients, 10 underwent colorectal surgery (anterior resection or right hemicolectomy) and 3 underwent urological surgery (percutaneous nephrolithotomy or nephrectomy). The remaining colorectal and urological patients (2 and 6 respectively) received alternative forms of analgesia (‘non-spinal’ group).

The quality of post-operative functional recovery was assessed using the Quality of Recovery-15 questionnaire (QoR-15), which evaluates five dimensions: physical comfort, emotional state, physical independence, psychological support, and pain. The questionnaire was administered three times: pre-operatively (baseline), one day and two days post-surgery (POD1 and POD2, respectively). We compared differences in QoR-15 scores between the ‘spinal’ and ‘non-spinal’ group. T-tests for independent samples and Mann-Whitney U-tests were used for normally and non-normally distributed data, respectively. A P-value of <0.05 was considered statistically significant.

Results: Global QoR-15 scores were significantly higher in the ‘spinal’ group compared with the ‘non-spinal’ on POD1 (p=0.013) and on POD2 (p=0.039). Among the five dimensions of the QoR-15, physical comfort scores were significantly higher in the ‘spinal’ group on POD1 (p<0.017). Physical independence, and emotional status scores were significantly higher in the ‘spinal’ group on both POD1 and POD2 (p<0.05). Psychological support scores were higher in the ‘spinal’ group on POD2 (p=0.012). There was no statistical difference between groups in baseline QoR-15 scores.

Conclusion: Despite its many limitations, this study suggests that intrathecal diamorphine may be associated with an enhanced quality of postoperative functional recovery in patients undergoing major laparoscopic surgery. Further research in the form of a randomised controlled trial is needed to confirm our findings.

Disclosure of Interest: None Declared
**P020**

**MULTIMODAL PREHABILITATION PROGRAM FOR PREOPERATIVE ENDOMETRIC CANCER IMPROVE THE FUNCTIONAL CAPACITY**

Cristina Rodríguez-Cosmen', Marc Sadurní', Ester Miralpeix', Mireia Rueda', Ana Cierco', M Angeles Oliver', Marta Corcoy'

'Anesthesiology, 'Ginecology, HOSPITAL MAR, Barcelona, Spain

**Objectives:** Multimodal prehabilitation is a preoperative program that could improve the preoperative functional capacity in patients undergoing surgery for cancer, to enhance post-operative recovery.

Prehabilitation before gynecologic cancer surgery is currently not widely adopted, and most research has focused on unimodal interventions.

We presented our experience during one year of a multimodal prehabilitation program in patients submitted to total laparoscopic hysterectomy and bilateral salpingo-oophorectomy endured pelvic and/or para-aortic lymphadenectomy for endometrial adenocarcinoma.

**Methods:** Our prehabilitation program includes medical optimization, and physical, nutritional and psychological evaluation. We first identify individual preoperative morbidity risk to minimize it before surgery. The 6 min walk test (6MWT) allows us to estimate oxygen uptake (VO2). Nutritional status is reported using MUST score. And psychological status are assessed using hospital anxiety and depression score (HADS).

If we estimate a VO2max >10 ml/kg/min we proposed an adapted home program based on exercise, if MUST < 2 we recommended an protein supplementation post-physical exercise, and if HADS>10 we proposed Mindfulness therapy for 3-4 weeks. In the other cases there is a special program supervised by physiotherapists, dieticians and psychologists. We do a second visit (preoperative) after 3-4 weeks of program and a third visit (postoperative) 4-6 weeks after surgery. The patients give us their daily routines to know the compliance and we revaluate the physical, nutritional and emotional status.

After 3-4 weeks of prehabilitation program, we considered a total improvement of the patient’s functional capacity when they obtain in the 6MWT an increased VO2> 10% or a decrease in maximum heart rate>10% or decrease in oxygen desaturation > 10%

**Results:** Since November 2016 until December 2017 were included 27 patients. Only 19 patients perform the two preoperative 6MWT. In 53% presented a total improvement of functional capacity, in 10.5% there were a partial improvement (increase in VO2 <10%) and in 36.5% cases there weren’t any improvement.

**Conclusion:** Our multimodal prehabilitation program for preoperative endometric cancer improve the functional capacity in the context of the ERAS program aimed at impact on the postoperative recovery.

**Disclosure of Interest:** None Declared
ENHANCED RECOVERY AFTER SURGERY: RESULTS IN MAJOR GYNECOLOGIC PROCEDURES

Dale W. Stovall*, Kristin P. Owens¹, Phyllis E. Lawani¹
¹Obstetrics and Gynecology, Methodist Dallas Medical Center, Dallas, United States

Objectives: To determine important clinical outcomes before and after the implementation of ERAS in women undergoing major gynecologic surgical procedures.

Methods: This was a single-center, cohort study. We identified two groups of patients for comparison. The first group (pre-ERAS) was composed of women who had undergone a major gynecologic surgical procedure 6 months prior to implementation of ERAS at our institution and the second group (post-ERAS) was composed of women who had undergone a major gynecologic procedure in the six months after implementation of ERAS at our institution. Major gynecologic procedures included in this study were abdominal hysterectomy, vaginal hysterectomy, abdominal myomectomy, and open staging procedures. All data and outcomes were pre-defined, collected prospectively and entered into a data base by trained medical personnel. Primary outcomes included post-op anti-emetic and opioid therapy. Secondary outcomes included intraoperative i.v. fluids and length of stay (LOS). Sample size calculation using Stata version 14 [2] indicate that we needed at least 100 subjects (50 in each group) to detect a change in proportion from 70% to 35% of anti-emetic and opioid use with 95% power using a 5%>level two sided test.

Results: A total of sixty subjects were included in the study, 29 in the pre-ERAS group and 31 in the post-ERAS group. The mean age of the study population was 49.5. The differences in post-operative anti-emetic use between groups was not significant. However, a significantly greater proportion of subjects in the post-ERAS group, none of whom received PCA administration, received i.v. opioids on the ward, 25.8% (8/31) versus 6.9% (2/29), respectively (P < 0.05). The post-ERAS group also received significantly less intraoperative i.v. fluids, 1595.9 mL versus 1909.5 mL, respectively (P < 0.05). The LOS was less for the post-ERAS group, 2.0 days versus 2.5 days, but the difference was not significant.

Conclusion: Implementation of the use of ERAS for major gynecologic surgical procedures at Methodist Dallas Medical Center significantly reduced i.v. fluid use, but did not reduce the need for anti-emetic or opioid therapy. The lack of PCA administration in the post-ERAS group likely contributed to the higher need for opioids in this group.

Disclosure of Interest: None Declared
**Objectives:** Lignocaine infusion administered perioperatively has been shown to provide opioid-sparing analgesia and contribute to decreased ileus, less inflammation and improved wound healing.\(^1\)\(^,\)\(^2\) As such, the aim is to compare the efficacy of intra-op intravenous (IV) lignocaine infusion versus peripheral nerve blocks (PNB) as part of a multi-modal analgesia regime for colorectal resections.

**Methods:** Data is entered prospectively into an ERAS audit database. A retrospective analysis of all colorectal resections performed between 1/4/2016 to 24/11/2017 was performed. Graphpad Prism was used for statistical analysis.

**Results:** In total 373 cases of colonic resections were performed. 164 used IV lignocaine and 85 had PNB intra-operatively. IV lignocaine was administered with a 1-1.5mg/kg bolus, followed by a 1-1.5mg/kh/hr infusion till the end of surgery. PNB were predominantly ultrasound guided bilateral transversus abdominis plane blocks with Ropivacaine 0.3% 20-25ml on each side (78% of 85 cases).

The baseline characteristics of the 2 groups had no significant differences. With regards to intra-operative management, the IV lignocaine group (46.3%) received significantly less long-acting opioids as compared to the PNB group (76.5%) (p=0.000031).

<table>
<thead>
<tr>
<th>Pain scores (No. of patients with VAS&gt;3)</th>
<th>IV lignocaine (total 164)</th>
<th>Nerve blocks (total 85)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>POD 0</td>
<td>35 (21.3%)</td>
<td>13 (15.3%)</td>
<td>0.251</td>
</tr>
<tr>
<td>POD 1</td>
<td>28 (10.1%)</td>
<td>16 (18.8%)</td>
<td>0.715</td>
</tr>
<tr>
<td>POD 2</td>
<td>7 (4.3%)</td>
<td>7 (4.3%)</td>
<td>0.198</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of patients with No Opioid Use postoperatively</th>
<th>IV lignocaine (total 164)</th>
<th>Nerve blocks (total 85)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>POD 0</td>
<td>73 (44.5%)</td>
<td>33 (38.8%)</td>
<td>0.389</td>
</tr>
<tr>
<td>POD 1</td>
<td>51 (31.1%)</td>
<td>26 (30.6%)</td>
<td>0.934</td>
</tr>
<tr>
<td>POD 2</td>
<td>90 (54.9%)</td>
<td>48 (56.5%)</td>
<td>0.811</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of patients with nausea/vomiting</th>
<th>IV lignocaine (total 164)</th>
<th>Nerve blocks (total 85)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>POD 0</td>
<td>36 (22.0%)</td>
<td>12 (14.1%)</td>
<td>0.137</td>
</tr>
<tr>
<td>POD 1</td>
<td>38 (23.2%)</td>
<td>15 (17.6%)</td>
<td>0.313</td>
</tr>
<tr>
<td>POD 2</td>
<td>34 (20.6%)</td>
<td>11 (6.7%)</td>
<td>0.130</td>
</tr>
</tbody>
</table>

**Conclusion:** IV lignocaine infusion provides similar analgesic efficacy as PNB. In addition, it is simpler, faster and safer to administer as compared to performing a PNB.

**References:**

**Disclosure of Interest:** None Declared
ACHIEVING HEALTH EQUITY IN SURGERY THROUGH ENHANCED RECOVERY AFTER SURGERY (ERAS): THE ELIMINATION OF RACIAL DISPARITIES IN POST-OPERATIVE LENGTH-OF-STAY IS SUSTAINED LONG-TERM

Lauren E. Goss¹, Melanie S. Morris¹, Joshua S. Richman¹, Jamie A. Cannon¹, Gregory D. Kennedy¹, Jeffrey W. Simmons², Sara J. Knight¹, Daniel I. Chu¹
¹Department of Surgery, ²Department of Anesthesia and Perioperative Medicine, University of Alabama at Birmingham, Birmingham, United States

Objectives: Racial/ethnic disparities in surgical outcomes exist. Early studies suggest that ERAS may eliminate disparities in post-operative length-of-stay (pLOS) (1). Questions remain about whether these results would be sustained beyond the initial implementation of ERAS. Our objective was to study ERAS in the three years before ERAS implementation and the three years after implementation examining its effects on racial/ethnic disparities in pLOS in a racially-diverse surgical population.

Methods: A single-institution retrospective review of patients undergoing elective colorectal surgery before (2012-2014) and after (2015-2017) the implementation of ERAS was conducted. Patient, procedure and ERAS-specific characteristics as defined by the American College of Surgeons National Quality Improvement Project (ACS-NSQIP) were included. Patients were stratified by race/ethnicity. The primary outcome was pLOS. Bivariate comparisons were made using chi-square and ANOVA tests for categorical and continuous variables, respectively.

Results: Of 1925 included patients (714 Pre-ERAS from 2012-2014 and 1211 ERAS from 2015-2017), 24.8% were black. The racial/ethnic composition of surgical populations were similar for each year from 2012-2017 (p=0.51). Overall, significant reductions in the median pLOS were observed between Pre-ERAS and ERAS patients (6 vs. 3 days, p<0.001). In the Pre-ERAS era, black patients had a significantly longer pLOS compared to white patients (6 vs. 5d, +1d difference, p<0.05). Under ERAS, the disparities in pLOS between white and black patients were eliminated (3 vs. 3d, 0d difference, p>0.05). On analysis by individual year, equitable outcomes in pLOS were sustained for each of the three years since ERAS implementation (2015-2017).

Conclusion: ERAS eliminates racial/ethnic disparities in pLOS and achieves equitable outcomes for previously disadvantaged surgical populations. These effects appear durable and add significant value to ERAS in the context of achieving health equity.


Disclosure of Interest: None Declared
OUTCOMES FROM A PERIOPERATIVE CANCER MULTIDISCIPLINARY TEAM MODEL: A SINGLE-CENTRE EXPERIENCE
David Timbrell¹, Shaun Preston², Javed Sultan², Pradeep Prabhu¹
¹Anaesthetics Department, ²Oesophagogastric Surgical Unit, Royal Surrey County Hospital, Guildford, United Kingdom

Objectives: Improving outcomes for high risk surgical patients has formed the basis for the rapid emergence of perioperative medicine as a subspecialty of anaesthesia.¹ It has been suggested that a multidisciplinary team (MDT) approach – “the Perioperative MDT” - may provide a useful forum to coordinate these efforts.² While MDT decision-making is already well established in many areas of the NHS, involvement of anaesthetists is often ad-hoc at best. In 2015, a joint anaesthetic & surgical ‘Perioperative’ MDT meeting (MDTM) was introduced at our institution for Upper Gastrointestinal (UGI) cancer patients. We report our findings of the workload and outcomes of this exemplar Perioperative MDT.

Methods: We performed a retrospective analysis of the workload of our UGI Perioperative MDT from January 2015 until September 2017. Data was collected from MDTM outcome sheets and, where necessary, further information was gathered from the hospital’s computerised records system.

Results: The mean number of cases listed for review has increased from 5.2 (2015) to 7.9 (2017) per MDTM. Median (IQR) number of cases listed for each meeting was 6 (5 – 8). Overall, 221 cases (154 patients) were listed for review in the MDTM during the evaluation period. Median (range) MDT discussions per patient was 1 (1 – 4). 131 (66.8%) cases discussed were considered suitable to proceed to surgery. In 52 (26.5%) cases, MDTM outcome was to defer a decision on surgery pending further review, intervention or discussion and 13 (6.6%) cases were deemed to not be suitable for surgery. Of those cases considered suitable to proceed to surgery, MDT discussion resulted in a significant alteration in perioperative management in 29 (22.1%) and/or referral for specialist investigation or review in 55 (42%).

Conclusion: Our Upper GI Perioperative MDT is well utilised and has provided a forum to direct perioperative care for high risk patients and ensure resources are used in a targeted manner. Perioperative MDT review provides an opportunity to identify those cases which will most benefit from further optimisation prior to surgery as well as those in which alternatives to surgery may be considered.


Disclosure of Interest: None Declared
Objectives: Impaired functional exercise capacity, measured by cardiopulmonary exercise testing (CPET), is associated with increased postoperative morbidity and mortality. Haemoglobin concentration is an important determinant of blood oxygen-carrying capacity and is commonly measured in surgical patients as preoperative anaemia is well known to be associated with poorer postoperative outcomes. Reduced haemoglobin concentration has previously been shown to reduce functional exercise capacity. We, therefore, sought to identify whether a correlation exists between haemoglobin concentration and CPET variables.

Methods: Between 2015 and 2016, cardiopulmonary exercise tests and haemoglobin concentrations were recorded for 227 patients being considered for major elective surgery. Data was analysed to assess for correlation between haemoglobin concentration [Hb] and CPET variables including peak oxygen uptake (pV02), anaerobic threshold (AT) and peak work.

Results: Data was available for 227 patients (74.9% male, mean age 68yrs). Only a weak positive correlation existed between Hb and pV02 ($r=0.28$, $p<0.001$), Hb and AT ($r=0.14$, $p<0.05$) and Hb and peak work ($r=0.27$, $p<0.001$).

Conclusion: The positive correlation between haemoglobin concentration and CPET variables is weak and unlikely to be of significance in a clinical setting. Low haemoglobin concentration should not be considered as sole justification for poor performance at CPET.

References:

Disclosure of Interest: None Declared
Objectives: Enhanced recovery after surgery (ERAS) programs for major abdominal surgery, including duodenopancreatectomy, have been established with successful results. Goal-directed fluid therapy and fluid balance is one of the cornerstone in ERAS. The aim of the present study was to evaluate the potential influence of perioperative fluid administration on postoperative complications.

Methods: Retrospective analysis based on a prospective database, including all consecutive patients undergoing elective duodenopancreatectomy within an ERAS program in Lausanne University Hospital (CHUV). Perioperative fluid volumes as well as postoperative morbidity and mortality were determined. The threshold of 3500ml of fluid was used as cutoff according to the ERAS guidelines. The comprehensive complication index (CCI) was used to assess overall morbidity.

Results: Between October 2012 and June 2017, 178 consecutive patients with a mean age of 65 years underwent duodenopancreatectomy within an ERAS program. Fourteen patients refused the use of their data. The median length of stay was 17 days (interquartile range (IQR) 12-26). The median intravenous volume of fluid within the first 24 hours was 5005 ml (IQR3963-6124). The overall 30 days complication rate was 87.2% (143 patients) and the overall 30-days mortality rate was 1.8% (3 patients). The median comprehensive complication index (CCI) was 29.6 (20.9-46.1). Patients with < 3500ml intravenous fluid administration within the first 24 hours (n=21) had a median CCI of 20.9 (0-34.2) compared to a median CCI of 29.6 (20.9-46.5) for those with more than 3500ml (n=143) (p-value 0.043). The Spearman correlation between intravenous fluid administration and postoperative CCI was statistically significant (rho = 0.162, p = 0.038).

Conclusion: Increasing intravenous fluid administration within the first 24 hours of duodenopancreatectomy in an ERAS program seems to be associated with increased morbidity.

Disclosure of Interest: None Declared
FEASIBILITY OF ENHANCED RECOVERY PROTOCOL FOR DUODENOPANCREATECTOMY: A MULTICENTRIC COHORT STUDY

Didier Roulin¹, Emmanuel Melloul¹, Martin Hubner¹, Maximilian Bockhorn², Jakob Izbicki², Dionisos Vrochides³, David Iannitti³, Mustapha Adham⁴, Nicolas Demartines¹

¹Department of Visceral Surgery, Lausanne University Hospital (CHUV), Lausanne, Switzerland, ²Department of General, Visceral and Thoracic Surgery, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany, ³Department of Surgery, Carolinas Medical Center, Charlotte, United States, ⁴Department of Digestive, Hepato-biliary and Pancreatic Surgery, Edouard Herriot Hospital, Lyon, France

Objectives: Specific enhanced recovery after surgery (ERAS) guidelines for duodenopancreatectomy were published, mostly by extrapolating data from colorectal surgery. This study aimed to assess the feasibility of an ERAS protocol by determining the compliance after duodenopancreatectomy according to the validated ERAS Society guidelines.

Methods: Retrospective analysis based on a prospective database, including all consecutive patients undergoing elective duodenopancreatectomy within an ERAS program in four tertiary referral centers (Switzerland, United States, France, and Germany). Postoperative outcome (length of stay, postoperative complication according to Clavien classification) and compliance to the ERAS protocol (defined as the number of fulfilled element divided by the total number of recommended ERAS items) were analyzed.

Results: Between October 2012 and June 2017, 404 consecutive patients with a mean age of 65 years (standard deviation +/- 12) underwent duodenopancreatectomy. Median length of stay was 14 days (interquartile range 9-22). There were 46 readmissions (11.8%). The 30 days overall complication rate was 83.3% (n=325) with 46.2% (n=180) minor (Clavien grade I-II) and 37.2% major (Clavien grade III-IV) complications. The 30 days mortality was 3.1% (n=12). The pancreatic fistula rate was 30.5% (n=119) and the delayed gastric emptying rate was 33.3% (n=130). Mean overall compliance was 63.6% (Standard deviation (SD) +/- 9.5), with pre-, intra- and post-operative compliance of 92.9% (SD +/- 10.1), 80.8% (SD +/- 18.9), and 40.7% (SD +/- 15.3) respectively.

Conclusion: Enhanced recovery after surgery protocol according to published ERAS guidelines can safely be performed with favorable outcome. A high compliance to the protocol was observed in the preoperative and intraoperative period.

Disclosure of Interest: None Declared
**Objectives:** Iron deficiency is the most common and widespread nutritional deficiency, affecting up to two billion people worldwide. In a large series, anemia was present in 34% of non-cardiac surgical patients, with 75% of these cases due to iron deficiency. Many of these patients are anemic due to blood loss, chronic inflammation, or cancer cachexia. Preoperative anemia is associated with poor outcomes, including mortality and all cause complications. Preoperative optimization of hemoglobin via iron replacement has been shown to improve these outcomes. Oral iron supplementation will not work for certain groups of patients, but intravenous (IV) iron replacement is highly beneficial. The risk of newer IV iron infusions is very low, with anaphylaxis to iron sucrose being 1 in 5000.

**Methods:** Our medical center has incorporated IV iron therapy as part of a preoperative optimization program. Patients are seen as soon as possible once scheduled for surgery. They are screened per ASA/NICE guidelines, with decision making led by an attending anesthesiologist. If they are found to be anemic of a microcytic etiology, they will be further tested for iron deficiency. Patients with a hemoglobin less than 13 g/dL or a ferritin of <30 ng/mL will be referred to one of our infusion clinics for a 300mg infusion of iron sucrose. Patients not responsive to therapy, will be referred to hematology and/or gastroenterology. If it is an elective surgery, it will be delayed to allow for three separate infusions of iron sucrose. If it is an urgent surgery, one dose will be given.

**Results:** Implementation of an IV iron infusion program at a large medical center requires many key players. The preoperative clinic has worked closely with Surgery, Hematology, and the infusion clinics during development. Both provider and patient education materials were generated and distributed. So far sixteen patients have successfully undergone IV iron infusion.

**Conclusion:** Many patients presenting for surgery have iron deficiency anemia. IV iron replacement has been shown to improve perioperative outcomes. The risk is low and the reward is high. Implementation of an iron infusion program at a large academic center is a critical and feasible component of a dynamic preoperative optimization program. Future outcome studies will further validate IV iron as a key component of ERAS.

**References:**

- doi:10.1001/jama.2015.15572
- doi:10.1111/anae.13773

**Disclosure of Interest:** D. Meier: None Declared, M. Scott Other: Educational Chair, ERAS Society
PROGNOSTIC NUTRITIONAL INDEX PREDICTS POSTOPERATIVE OUTCOME IN OVARIAN CANCER

Ester Miralpeix 1, Sonia Gayete1, Josep M. Solé-Sedeño1, Cristina Rodríguez-Cosmen2, Antoni Payà1, Gemma Mancebo1
1Obstetric and Gynecologic department, 2Department of Anesthesiology, Hospital del Mar, Barcelona, Spain

Objectives: Ovarian cancer is a chronic disease with high risk of malnutrition. The prognostic nutritional index (PNI) is a useful predictor for short and long-term postoperative complications. Our aim was to examine the ability of PNI to predict postoperative complications in patients with ovarian cancer.

Methods: This retrospective study included 68 patients who underwent ovarian cancer surgery. In order to quantify metabolic impairment related of surgery, nutritional parameters reported were BMI, PNI, serum total protein (STP), serum albumin (SAIb), total lymphocyte count (TLC) and hemoglobin (Hb) before and 24-72h after surgery. The primary outcomes were to examine the impact of PNI in postoperative complications according to Dindo Clavier classification.

Results: The mean age of new diagnoses of ovarian cancer were 61 (range 21-91) y.o. Of all, 70.6% were diagnosed at stages III-IV. 40/68 patients underwent primary or staging surgery, while 28/68 were submitted to interval cytoreduction surgery. Among all those interventions, 18 were laparoscopic and 50 laparotomic procedure, reaching a mean surgery time of 291.5 minutes (range 60-570). Of all 9/68 patients suffered a severe complication (grade≥3). The nutritional values before surgery were: 7 STP, 4.3 SAIb, 1993 TLC and 12.2 Hb. None of the preoperative parameters related to major postoperative complications.

Postoperative nutritional parameters were average were: 5.3 STP, 3.1 SAIb, 497 TLC and 9.2 Hb; showing a significant decrease of nutritional status after intervention. The low postoperative SAIb and PNI values were correlated with severe postoperative complications (SAIb p=0.029; PNI p=0.032); as long as the Hb reduction as a secondary finding (p=0.012).

Conclusion: Metabolic preoperative baseline of patients with ovarian cancer does not seem to predict major postoperative complications. However, all types of major curative intent interventions involve a significant nutritional impairment in those patients, directly related with severe recovery complications. Both SAIb levels and PNI after surgery are useful predictors of postoperative complications in patients with ovarian cancer.

Disclosure of Interest: None Declared
**P030**  
**PROGRESSIVE IMPLEMENTATION OF ERAS PROTOCOL IN RADICAL CYSTECTOMY. OUTCOMES AUDIT.**

Gloria Nohales¹, Marta Corcoy², Esther Ruz¹, Gemma Llauradó³, Anna Sanroma¹, Lluis Cecchini¹  
¹Urology, ²Anesthesiology, ³Endocrinology, PARC DE SALUT MAR, Barcelona, Spain

**Objectives:** The implementation of an ERAS protocol for radical cystectomy is a slow process due to the difficulties in establishing the necessary circuits for the standard performance of the multidisciplinary team. It also has to overcome difficulties inherent to the sensitivities and the compliance with less scientific evidence items. Showing the progressive ERAS protocol implementation in our center and to audit our outcomes.

**Methods:** We have done a retrospective study (2012-2017). In this period, 152 patients underwent a radical cystectomy. 92 patients didn’t follow an ERAS protocol and 60 patients followed a progressive ERAS protocol implementation. The statistical tests performed were T-student and Chi-Square.

**Results:** By analyzing the ERAS group (60 patients) we see that the implementation of the items has been progressive. Since the 2012-2016 period, 40 patients were given progressive information: 49% received instructions to care the stoma/reservoir site, 65% nutritional evaluation and 27% concentrates of carbohydrates and enema. In 2017, 20 patients adhered strictly to all the items. Our results in terms of decrease in postoperative ileus, need for parenteral nutrition, days of inpatient hospital stay, complications Clavien-Dindo ³³ and readmission at 30 days have not demonstrated statistically significant results but a clear trend in improvement.

**Conclusion:** The implementation of an ERAS protocol in radical cystectomy is a long-term process but feasible. It allows standardizing the process improving performances as well as the satisfaction of the healthcare team and patient due to an enhanced care quality.

**Disclosure of Interest:** None Declared
META-ANALYSIS OF PERIOPERATIVE ENTERAL IMMUNONUTRITION AND MORBIDITY IN RADICAL CYSTECTOMY
François Crettenand*, Paul Martel¹, Yannick Cerantola¹
¹Urology, University Hospital CHUV, Lausanne, Switzerland

Objectives: Morbidity after radical cystectomy is common. Enteral immunonutrition (IN) containing arginine, ribonucleic acid, and omega-3 polyunsaturated fatty acids may improve nutritional status, immunological function, and clinical outcomes after intestinal surgery. The present study evaluated the impact of IN on outcomes following cystectomy.

Methods: A systematic literature search from January 1985 to September 2017 was performed in MEDLINE (PubMed) and Embase in English and French. Only randomized clinical trials (RCTs) investigating the impact of perioperative IN on radical cystectomy patients were included, with emphasis on overall, infectious and gastrointestinal complications.

Results: Three RCTs enrolling a total of 233 patients were included in the meta-analysis. The studies showed significant heterogeneity with respect to patients, control groups, and timing of IN that limited group analysis. IN was associated with lower major (Clavien grade 3-5; odds ratio (OR) 0.37, 95% confidence interval (CI) 0.18-0.8) but not minor (Clavien grade 0-2) (OR 1.91, CI 0.93-3.91) complications. Less overall infections (OR 0.54, CI 0.3-0.96) and ileus were observed in the IN group (OR 0.42, CI 0.15-1.24).

Conclusion: Perioperative enteral immunonutrition may decrease major complications after radical cystectomy within the limits of heterogenous data.

Disclosure of Interest: None Declared
P032
RATE OF POSTOPERATIVE COMPLICATIONS AFTER BOWEL SURGERY IN THE SETTING OF AN ENHANCED RECOVERY AFTER SURGERY (ERAS) PROGRAM: WHAT HAPPENS WHEN NO MECHANICAL BOWEL PREPARATION IS IMPLEMENTED?
Gloria Salvo1, Larissa A. Meyer1, Javier Lasala2, Maria D. Iniesta1, Camila Corzo1, Ashley Siverand1, Tina Suki1, Bryan Fellman3, Pedro T. Ramirez1
1Gynecologic Oncology and Reproductive Medicine, 2Anesthesia and Perioperative Medicine, 3Biostatistics, MD ANDERSON CANCER CENTER, Houston, United States

Objectives: ERAS Guidelines in gynecologic oncology surgery recommend avoidance of mechanical bowel preparation. One potential concern lies specifically in patients who have bowel procedures. The aim of this study is to evaluate the rate of bowel-related complications in patients undergoing bowel surgery vs. none as part of gynecologic procedures in an ERAS program.

Methods: All patients who underwent bowel surgery (small and/or large bowel resection, colostomy or ileostomy, gastric resection, or posterior exenteration) between November 2014 and April 2017 were included in analysis and compared with those who did not undergo the listed bowel procedures. None of the patients included in our analysis had mechanical bowel preparation prior to surgery. Continuous measures were compared using a Wilcoxon rank-sum test and categorical variables were compared using Fisher’s exact or chi-squared test. All statistical analysis were performed using Stata/MP v15.0 (College Station, TX).

Results: There were a total of 701 patients who met inclusion criteria with 127 (18%) who underwent bowel procedures. The majority (72.2%, bowel procedure and 58.5% in no bowel procedure) had ovarian cancer. Patients with bowel procedures had a median length of stay (LOS) of 5 vs. 3 days for those without a bowel procedure (p < 0.001). Those with bowel procedures had higher rates of readmission (20.5% vs. 9.8%; p = 0.001) and reoperation (5.5% vs. 1.4%; p=0.004). The rates of gastrointestinal complications was 44.9% (95% CI: 36.1 – 54.0%) in the bowel procedure group and 20.7% (95% CI: 17.5 – 24.3%) in the no bowel procedure group (p < 0.001).

Conclusion: Overall rate of bowel related complications in patients who underwent a bowel procedure and no routine bowel preparation was 45%. Bowel procedures were also associated with a longer LOS, and higher rates of readmissions and reoperations. Future studies are currently underway evaluating the role of oral antibiotic bowel preparation.

Disclosure of Interest: G. Salvo: None Declared, L. Meyer Grant / Research support from: K07-CA201013, J. Lasala: None Declared, M. Iniesta: None Declared, C. Corzo: None Declared, A. Siverand: None Declared, T. Suki: None Declared, B. Fellman: None Declared, P. Ramirez: None Declared
Objectives: Enhanced recovery after surgery (ERAS) colorectal programs have been shown to decrease surgical stress and reduce postoperative morbidity and hospital stay. Most of the Hospitals applying ERAS program are academic tertiary Centers. The feasibility and the efficacy of the ERAS implementation program in smaller community Hospitals should be better defined. The aim of this study is to evaluate the results of the first ERAS program in a French community hospital

Methods: ERAS implementation program started in March 2016. The first ERAS patient was included in June 2016. From June 2016 to November 2017, 97 consecutive patients undergoing major colic surgery have been treated according to ERAS principles and their data prospectively recorded on a database. Outcomes were compared with a retrospective pre-ERAS group (50 patients).

Results: The groups were comparable for age, gender, BMI, ASA. Mean compliance to ERAS guidelines was 26% before starting the program, vs 73% in November 2017. Comparing to pre-ERAS, ERAS patients had quicker retour of bowel function (2.2 vs 8.6 days p=0.006) and to a normal diet (1.9 vs 8.6 days p=0.004), less severe complications (1.1 vs 8% p=0.046), shorter hospital stay (9.2 vs 6.8 days p=<0.001).

Conclusion: The first ERAS implementation program in a French community hospital was successful. ERAS patients experienced a significant reduction of complication and hospital stay

Disclosure of Interest: None Declared
MAKING PATIENTS FIT FOR SURGERY: INTRODUCING A FOUR PILLAR MULTIMODAL PREHABILITATION PROGRAMME IN COLORECTAL CANCER

Gwen Thomas¹, Stefan van Rooijen¹, Goof Schep², Rianne van Lieshout³, Sandra Beijer⁴, Rosalie Dubbers⁵, Francesco Carli⁶, Rudi Roumen¹, Gerrit Slooter⁷
¹General Surgery, ²Sports Medicine, ³Department of Nutrition, Maxima Medical Centre, Eindhoven, ⁴Netherlands Comprehensive Cancer Organisation, Utrecht, ⁵Department of Physiotherapy, Maxima Medical Centre, Eindhoven, Netherlands, ⁶Anesthesiology, Montreal General Hospital, Montreal, Canada, ⁷Maxima Medical Centre, Eindhoven, Netherlands

Objectives: Following surgery for colorectal cancer, up to half of patients may develop complications such as anastomotic leakage, ileus and wound infection. Number and severity of complications are closely related to preoperative functional capacity. Enhancing patients' functional capacity prior to surgery ('prehabilitation') may facilitate faster recovery and improve health related quality of life (HRQoL). However, time before surgery is short, mandating a multimodal and high-intensity training approach. This study investigated feasibility and safety of a high-intensity, multimodal, personalised prehabilitation program for colorectal cancer.

Methods: Fifty patients undergoing elective colorectal surgery for cancer were included. Patients were assigned to an intervention (n=20, prehabilitation) or control group (n=30, standard care) according to availability of the program. Both groups received perioperative care in accordance with the enhanced recovery after surgery (ERAS) guidelines. Prehabilitation consisted of a multimodal program including high-intensity training, high-protein nutrition, smoking cessation and psychological support. Program attendance, patient satisfaction, adverse events and parameters assessing functional capacity were determined.

Results: Program evaluation revealed a high (88%) attendance rate and high level of patient satisfaction. No significant adverse events related to the program occurred. After prehabilitation, significant improvements were observed for all patients in terms of endurance, strength, or both. Eighty-six percent of patients in the intervention group recovered to baseline functional capacity within four weeks after surgery, versus only 40% in the control group (p<0.01).

Conclusion: A comprehensive multimodal and multidisciplinary prehabilitation program including high-intensity training for colorectal cancer patients is feasible and effective. A randomized controlled trial (NTR5947) was initiated to determine whether multimodal prehabilitation may lower morbidity and mortality rates in colorectal surgery.

Disclosure of Interest: None Declared
**SYSTEMATIC REVIEW ON PREHABILITATION IN PATIENTS UNDERGOING MAJOR ABDOMINAL SURGERY: WHY ARE WE FAILING TO PROVE THE OBVIOUS?**

Gwen Thomas¹, Rizwan Tahir², Bart Bongers³, Victor Kallen², Gerrit Slooter⁴, Nico van Meeteren⁵

¹General Surgery, Maxima Medical Centre, Eindhoven, ²Department of Microbiology & System Biology, TNO, Zeist, ³Department of Epidemiology, Care and Public Health Research Institute (CAPHRI), Maastricht University, Maastricht, ⁴Maxima Medical Centre, Eindhoven, ⁵Top Sector Life Sciences and Health (Health-Holland), The Hague, Netherlands

**Objectives:** The impact of surgery on postoperative physical functioning depends on the invasiveness of the procedure and the patient’s resilience, the ability to adapt and effectively respond to stressors as surgery and hospitalization. Resilience is associated with preoperative physiological reserve capacity: higher levels positively influence the impact on postoperative physical functioning. Although studies demonstrate positive effects of prehabilitation on preoperative physiological reserve capacity, conflicting results are reported concerning its postoperative effects, possibly due to different outcome measurements used. We aim to review the content and postoperative outcomes of studies investigating prehabilitation in patients undergoing abdominal surgery.

**Methods:** The electronic databases PubMed, Medline, Embase, and PEDro databases were searched. Studies were eligible for inclusion when they 1) investigated the effects of physical prehabilitation in patients undergoing abdominal surgery for cancer, were conducted as a randomized controlled trial (RCT). Participant characteristics, elements and content of prehabilitation, effects on physical fitness, and postoperative clinical parameters such as postoperative complications, postoperative mortality, length of stay were reported.

**Results:** 7 articles were included in the present review. Outcomes reported vary widely between studies, and reporting of postoperative outcomes is often missing or incomplete. Details of the content of prehabilitation are not described in all studies, making it hard to assess the validity of current research in prehabilitation. Also, clinical context is not reported consistently over studies. One article shows a clear relation between prehabilitation and reduction of postoperative complications.

**Conclusion:** Studies with high methodological and therapeutic validity seem to demonstrate positive effects of prehabilitation on postoperative outcomes in patients undergoing major abdominal surgery. Analysis of patient resilience by taking postoperative complications, and the impacts of these complications on recovery and quality of life, may illustrate the benefits of prehabilitation more clearly.

**Disclosure of Interest:** None Declared
ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOLS AFTER TOTAL HIP AND KNEE ARTHROPLASTY: A SYSTEMATIC REVIEW

Hatice Tunç¹, Sibel Şentürk¹
¹Nursing Department, Mehmet Akif Ersoy University, Burdur, Turkey

Objectives: Enhanced Recovery After Surgery (ERAS) protocol is listed among the evidence-based practices as they promote a multidisciplinary approach to patient care, with an aim to expedite recovery, support an early discharge and decrease postoperative complications. The aim of this study is to systematically evaluate studies examining the effect the application of certain components of the ERAS protocols in patients undergoing total hip and knee arthroplasty.

Methods: The study was conducted between October and December 2017 using the keywords “Enhanced Recovery After Surgery”, “Enhanced Recovery After Total Hip and Knee Arthroplasty”, “ERAS” and “Total Hip and Knee Arthroplasty” in the Cinahl, Cochrane, Ovid, Pubmed, Web of Science and Science Direct search engines. The full texts of 3990 articles published in English between 2010 and 2017, which can be accessed in full text, along with the original 11 randomized controlled studies were sampled. Data was then analyzed with the aid of a standard data summary form designed by the researchers.

Results: In the 11 randomized controlled studies included in the review; there are only two studies comparing the standard care and the ERAS protocols of the total knee and hip arthroplasty operations. It was found that the ERAS protocols had a significantly shorter duration of hospital stay, analgesia use and CRP levels at a considerably lower level. Other studies using ERAS protocols have found that the IV administration of Tranexamic acid markedly reduces blood loss during surgery and high volume infiltration analgesia reduces pain for 32 hours postoperatively. Another study found that the initial 800 mL catheterization reduced the need of postoperative urinary catheterization and urinary complications compared to a 500 mL catheterization. 12 months of telemedicine follow-up accelerated discharge and reduced hospital stay.

Conclusion: ERAS practices play a significant role in rapid healing and reducing complications of knee and hip arthroplasty. There is no standard protocol for knee and hip arthroplasty, and further studies in the area are required to bolster the existing evidence, although there are studies pertaining to interventions to reduce hospitalization, analgesic use, pain, blood loss and urinary catheter needs.

Disclosure of Interest: None Declared
THE IMPACT OF ERAS IN VBHC: REDUCTION OF HEALTHCARE COSTS AFTER FULL IMPLEMENTATION OF ERAS PROTOCOLS IN LAPAROSCOPIC COLORECTAL SURGERY.
Henriette Smid-Nanninga¹, Leense S Wagenaar², Annette FT Olieman¹, Bastiaan B. Pultrum¹, Hanneke van Kooten-Mosterd², Brenda Zoer², Hans Donald De Boer²
¹Department of Surgery, ²Department of Anesthesiology, Pain Medicine and Procedural Sedation and Analgesia, Martini General Hospital Groningen, Groningen, Netherlands

Objectives: Implementation of ERAS protocols results in significant improvement of perioperative care, reduced LOS and reduction of healthcare costs. However, identifying detailed cost reduction factors and calculating net savings is challenging. The role of ERAS in valued based healthcare (VBHC) has to be determined. Since January 2017 ERAS is implemented in our hospital which resulted in a reduction in complications (>40%) and LOS (>2.5d). The objective of this analysis was to identify cost reducing factors and to evaluate the initial effects of full ERAS implementation on healthcare costs in the first three months of 2017.

Methods: After approval of the Medical Ethical Committee, we analysed the first 83 patients regarding healthcare costs (January-March 2017). Outcome measures were identifying cost reducing factors. The effects on healthcare costs were quantified and analyzed.

Results: The most important cost reducing factors (reduction in day or %) identified were: LOS (2.5 day), stoma (50%), anastomotic leakage (4.8 →1.4%), re-operations (5.3 →2.4%), ICU admissions (0.7 →0.2 day). Quantification of these cost reducing factors and analysis of impact on healthcare costs resulted in an estimated gross cost reduction of 1240-1300 € per patient. Cost reduction on micro economic level needs to be determined.

Conclusion: Identifying detailed cost reducing factors and calculate net cost reduction after full implementation of ERAS is challenging. However, based on our findings in the first 83 patients, cost reduction was estimated 1240-1300 € per patient. Although the determination of cost reduction on a micro economic level needs further analysis, the significant economic effects of ERAS in VBHC are clear.

Disclosure of Interest: None Declared
DISCHARGE WITHIN 48 HOURS AFTER ELECTIVE COLORECTAL SURGERY IS FEASIBLE WITH FULLY IMPLEMENTED ERAS PROTOCOLS

Henriette Smid-Nanninga 1, Annette F.T. Olieman 2, Leense S. Wagenaar 3, Bastiaan B. Pultrum 2, Hanneke van Kooten-Mosterd 4, Brenda Zoer 3, Anneke Bueving-Tol 2, Hans Donald De Boer 3

1Eras Nurse and coordinator, 2Department of Surgery, 3Department of Anesthesiology, Pain Medicine and Procedural Sedation and Analgesia, 4Pacu Nurse, Martini General Hospital Groningen, Groningen, Netherlands

Objectives: Implementation of multidisciplinary approached ERAS programs results in a significant improvement of perioperative care and reduced length of stay (LOS). The Median LOS in the Netherlands is 5 days for colon surgery (CS) and 6 days for rectal surgery (RS). Since 1 year our hospital is ERAS center of excellence and able to reduce complications by more than 40% and to achieve a significant reduction in LOS. The objective of this retrospective analysis is to demonstrate that the LOS can be reduced to < 48 hours when the multidisciplinary approached ERAS programs are fully executed.

Methods: After approval of the Medical Ethical Committee, we searched for patients in our database system (January-December 2017) that could be discharged within 48 hours. Primary outcome measures were NRS and PONV-scores, opioid use and compliance to the ERAS protocols. Secondary outcome measures were 30-day readmissions and reoperations.

Results: Sixty-six patients could be identified, 43 for CS (M/F=20/23, ASA II/III=24/19, mean age 62.8y range 35-79y) and 23 for RS (M/F=12/11, ASA II/III=13/10, mean age 62.9y range 50-78y). NRS scores and opioid consumption are shown in Table 1. The adherence to the ERAS protocol in CS and RS was > 70%. Two patients, one in each group showed mild PONV. In the period analysed, 26% of the elective CS and RS patients could be discharged within 48 hours. There were no 30-days readmissions or re-operations reported.

Table 1. NRS scores and opioid consumption, calculated in mg morphine equivalents, (mean and range) in CS and RS.

<table>
<thead>
<tr>
<th>Patients</th>
<th>Colon surgery (n=43)</th>
<th>Rectal surgery (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NRS</td>
<td>opioids</td>
</tr>
<tr>
<td>Day 0</td>
<td>2.0 (0-5)</td>
<td>10.1 (10-15)</td>
</tr>
<tr>
<td>Day 1</td>
<td>1.3 (0-3)</td>
<td>1.2 (0-10)</td>
</tr>
<tr>
<td>Day 2</td>
<td>0.6 (0-2)</td>
<td>0</td>
</tr>
</tbody>
</table>

Conclusion: Implementation of multidisciplinary approached ERAS programs resulted in an improvement of perioperative care and a significant reduction in LOS. When ERAS is fully executed, discharge within 48 hours is feasible.

Disclosure of Interest: None Declared
INTER-DISCIPLINARY TEAM APPROACH TOWARDS FEASIBILITY OF NURSE-LED EARLY MOBILISATION FOR POST-OPERATIVE COLORECTAL PATIENTS

Hon Guan Wong¹, Hui Ling Loh¹, Meng Kwang Tan¹, Lan Pei Kong¹, Mei Fern Foong¹, Kwang Yeong How², Tan Jonathan³, Balachandran Jayachandran⁴ on behalf of TTSH ERAS CORE TEAM
¹Nursing Department, ²Surgical Department, ³Anaesthesiology, ⁴Physiotherapy Department, Tan Tock Seng Hospital, Singapore, Singapore

Objectives: To engage Staff nurses to participate in early mobilisation for the post-operative colorectal patient in surgical high dependency unit (HDU). Patients mobilisation is limited by post-operative pain, drips and drains and poor collaboration with the nurses.

With growing evidence for early mobilisation and getting ready to adopt Enhanced recovery after surgery (ERAS) in our centre, We formed an interdisciplinary team of surgeons, anaesthetist, nurses and physiotherapist. We embarked on a quality improvement project to improve early mobilisation collaboratively.

Methods: Inclusion: Elective colorectal patients, Pre-morbidly independent

Exclusion: Bedbound patients

Setting: 28 bedded HDU

Study period: January 2017 to December 2017

Participants: 285 patients

Outcome: Percentage of patients sat out in chair by staff nurses on day 0 and day 1

Study Design

Quality improvement

○ Forming a multidisciplinary team

Surgeons, Ward Nurses, Anaesthetist and physiotherapist

○ Root cause analysis

Fishbone diagram was used to do root causes analysis (RCA) for patients limited mobilisation out of bed post-operatively

RCA identified

No clarity on eligible patients

Poor knowledge about benefits of early mobilisation in patients and healthcare workers

Lack of training for Staff nurses to mobilize patients

Intervention

Creating mobilisation criteria with consensus from all stakeholders

Roadshow to create awareness on early mobilisation and disseminate mobilisation criteria for all healthcare workers

Pre-operative counselling to patients on importance of early mobilisation

Skills training to staff nurses and physiotherapist to mobilise patients with drips and drains

Results: The data was collected by using direct observation daily

Baseline data collected for 6 months pre-intervention showed only 10 % (7/70) of patients mobilised by staff nurses. Post-intervention 90% (196/215) of patients were mobilised to sit out in a chair by staff nurse post-operatively.

Conclusion: Early mobilisation by staff nurse for post-operative colorectal patients is feasible with clear mobilization criteria and awareness about benefits of early mobilisation to patients and healthcare workers. This change also has created more opportunities for patients to be ambulated by a physiotherapist on a postoperative day 1.

Disclosure of Interest: None Declared

52
ERAS PROTOCOL INFLUENCE ON POSTOPERATIVE INFLAMMATION AND SHORT-TERM POSTOPERATIVE RECOVERY OUTCOMES IN COLORECTAL CANCER SURGERY
In Kyu Lee¹, Heba Jalloun²
¹Surgery, Seoul St. Mary's Hospital, The Catholic University of Korea, ²Surgery, Seoul St. Mary's Hospital, The Catholic University of Korea, Seoul, Korea, Republic Of

Objectives: The purpose of this study is to observe ERAS effect on postoperative inflammatory markers, and to explore the effect of high compliance and epidural anesthesia on inflammation and postoperative recovery outcomes.

Methods: Four hundred patients underwent colorectal cancer surgery, at two different periods from January 2006 to December 2009 and from January 2017 to July 2107, at two different hospitals. Cases were operated by two surgeons. Data related to patient's clinicopathological features, inflammatory markers that were performed at preoperative and postoperative daily till day 4, percentage of compliance to ERAS protocol elements, and epidural anesthesia were collected from a prospectively maintained database.

Results: 82 patients (27.7%) at ERAS protocol(EP) group were compared to 214 patients (72.3%) at Conventional protocol group (CP). From the comparative study, the surgical procedure type showed a statistical significant difference (p= 0.032). Complication rate, severity of complication and LOS were less at EP group with (p=0.005, and p=0.002, and p= <0.001 respectively). With EP, the Postoperative WBC count was lower (p=<0.001), and the duration required for WBC count to normalize was shorter (p=<0.001). The other inflammatory markers such as postoperative lymphocyte (p=0.008), postoperative N/L ratio (p=0.032), postoperative CRP(p=<0.001), and postoperative GPS(p=<0.001) were all reduced at EP group. Regression analysis found ERAS as an independent factor affecting these inflammatory markers with significant statistical differences. High compliance ≥ 70 % had only an association with strong association with complication, Clavien-Dindo Classification and LOS with significant statistical differences (p=0.008, p=0.018, and p= <0.001 respectively). Epidural anesthesia shortened the time needed for WBC count to normalize (p=0.010) with relative effect on postoperative CRP (P=0.046)

Conclusion: ERAS protocol decreases early postoperative inflammation, and improves postoperative complication rate, complication severity, and length of hospital stays. High compliance to ERAS protocol elements of ≥70% accelerates the positive effect of ERAS on short-term postoperative recovery outcome, but its effect on inflammation was so trivial, the same as the influence of epidural anesthesia which is still controversial and further studies are required

Disclosure of Interest: None Declared
PREHABILITATION IN THE ELDERLY: IS IT POSSIBLE?

Marta Corcoy¹, Gloria Nohales², Irene Romero¹, Marc Sadurni¹, Lluis Cecchini², Jordi Vallès¹
¹Anestesiology, ²Urology, PARC DE SALUT MAR, barcelona, Spain

Objectives: Elderly patients are often proposed for major surgery, despite that their multiple comorbidities, poor physical and nutritional status increase their perioperative risk overall. The inclusion of these patients in multimodal prehabilitation programs to improve their preoperative functional capacity could be beneficial. Non-supervised prehabilitation program is not clear to be effective in these patients.

The aim of this study is to assess the effectiveness of a non-supervised trimodal prehabilitation program in patients over 75 years undergoing major surgery.

Methods: We conducted an observational study including all patients over 75 years undergoing major surgery (radical cystectomy, colorectal surgery, hysterectomy, Whipple procedure) from January to December 2017. During the four weeks before surgery, patients entered a trimodal prehabilitation program with non-supervised physical exercises (intervallc, strength, elasticity and respiratory), a nutritional program with protein supplements and cognitive support based on mindfulness. We included 27 patients aged 75 or over, who attended a first consultation with an anesthesiologist who presented the program. Their basal physical status was assessed with a 6-minute walking test (6MWT). Three weeks later, a new evaluation was performed and the results were compared to the basal physical evaluation.

The main study outcome was the variation of the maximum oxygen consumption (VO2) between the first visit and after the training period calculated according the six minute walking test (6MWT).

Results: 20 patients (74%) comply with the prehabilitation program correctly. 7 patients (26%) did not follow the program appropriately. Lack of compliance was due to poor interest in the program or difficulties to follow it. There was a 5.5% increase in VO2 in compliant patients, whereas patients with poor compliance performed worse (decrease in 0.4%).

Conclusion: Prehabilitation programs are effective and advisable in the elderly. Three fourths of patients improved their functional capacity with a four weeks non supervised training program. Patients with poor compliance probably need a supervised program to achieve better results.

Disclosure of Interest: None Declared
P042
EFFECT OF FOUR-WEEK MULTIMODAL PREHABILITATION ON CARDIORESPIRATORY FITNESS AND INSULIN SENSITIVITY IN PATIENTS AWAITING PANCREATIC RESECTION

Jason M. George*, Martin B. Whyte, Michael J. Scott, Timothy A. Rockall

1Minimal Access Therapy Training Unit (MATTU), Royal Surrey County Hospital, 2Dept of Clinical and Experimental Medicine, University of Surrey, Guildford, United Kingdom

Objectives: Pancreatic surgery is high risk with morbidity rates ranging between 30-60%. Insulin resistance [1] and poor cardiopulmonary fitness [2] are associated with postoperative complications. Supervised exercise programmes can improve cardiopulmonary fitness and insulin sensitivity. Immunonutrition with fish oil and antioxidants may work synergistically with exercise interventions in the preoperative period. This is an interim analysis of four-week multimodal prehabilitation on insulin sensitivity and cardiopulmonary fitness in patients awaiting pancreatic resection.

Methods: Eleven patients listed for pancreatic resection, for benign or cancerous disease, were enrolled. The four-week prehabilitation intervention comprised: resistance and high intensity interval training x3/week and daily omega-3 fatty acids (2g) and 30ml extra virgin olive oil. Participants underwent a baseline cardiopulmonary exercise test (CPET). Insulin sensitivity was assessed using mean glucose infusion rate (GIR) for the final 30 mins of a 120 min hyperinsulinaemic-euglycaemic clamp (insulin dose 1mU/kg/min), adjusted for fat-free mass and steady-state glucose concentration. CPETs and insulin clamps were repeated after four weeks. Body fat percentage and hand grip strength were also measured.

Results: Eleven patients completed the prehabilitation programme with no adverse events. Attendance on the exercise programme was 100%. No difference in insulin sensitivity was observed after four weeks ($P = 0.489$ - paired t-test). Similarly, no difference was observed in body fat percentage or hand grip strength ($P = 0.219$ and $P = 0.098$, respectively). Prehabilitation led to an improvement in VO$_2$ at lactate threshold of 1.68ml per kg per min ($P = 0.014$). Statistically significant improvements were observed in peak VO$_2$ ($P = 0.017$) and maximum load achieved ($P = 0.003$).

Conclusion: This intervention was safe and feasible in patients awaiting pancreatic resection. Four-week multimodal prehabilitation resulted in an improvement in cardiorespiratory fitness, but no change in insulin sensitivity. Further work is required to examine the benefits of improved fitness against the time-delay to surgery.


Disclosure of Interest: None Declared
P043
CLINICAL APPLICATION OF ERAS PROGRAM IN PERIOPERATIVE MANAGEMENT OF ROBOT-ASSISTED GASTRECTOMY FOR GASTRIC CANCER: EXPERIENCES FROM SINGLE-CENTER
Li Yun1, jiang zhiwei1, wang gang1, liu jiang1, xia cancan1, jiang chuanwei1, wang haifeng1, zhou jiahui1
1Research Institute of General Surgery, Jinling Hospital, School of Medicine, Nanjing University, Nanjing, China

Objectives: The aim of current study is to evaluate the feasibility of a clinical pathway employing ERAS program for patients undergoing robot-assisted gastrectomy due to gastric cancer.

Methods: The ERAS protocol containing the following essential components: preoperative oral intake of carbohydrate without bowel preparation, early oral feeding and mobilization after operation, multimodel analgesia, limited perioperative fluid infusion during the perioperative period, discard of nasogastric tube, was applied to 35 patients (14 female) from July 2017 to January 2018. Demographic and clinicopathologic datas were collected prospectively. Perioperative outcomes, including implementation of early oral diet and early mobilization in the first 24 h, total amount of venous infusion during the perioperative period, length of hospital stay, postoperative morbidity and mortality, 30-day readmission rate, were assessed.

Results: 35 cases (100%) achieved early oral diet in the first 24 h, while early mobilization was implemented in 33 patients (94.3%). The mean of intravenous infusion volume postoperatively was 6087.5ml (range 3000ml~14900ml). The median of length of postsurgical hospital stay was 4d (range 2d~7d). The overall morbidity during postoperative rehabilitation was 5.71%, among which serious complications (Clavien-Dindo IIIa or greater) did not occur. The 30-day readmission rate was 2.86%. There was no mortality during the whole follow-up period.

Conclusion: ERAS program employed in the perioperative treatment of robot-assisted gastrectomy could improve postoperative outcomes and promote postoperative rehabilitation. The favorable effects of ERAS in this surgical domain require to be confirmed via a prospective investigation enrolling a large cohort.

Disclosure of Interest: L. Yun Grant / Research support from: National Natural Science Foundation of China (No.81500417); Social Development Fund of Jiangsu Province, China (No.BE2015687); Medical science and technology Fund of Zhejiang Province (No.2015KYB353). J. zhiwei: None Declared, W. gang: None Declared, L. jiang: None Declared, X. cancan: None Declared, J. chuanwei: None Declared, W. haifeng: None Declared, Z. jiahui: None Declared
IMPACT OF AN EVIDENCE-BASED EDUCATIONAL PROGRAM ON VARIABILITY OF INTRAOPERATIVE FLUID ADMINISTRATION WITHIN AN ENHANCED RECOVERY AFTER SURGERY (ERAS) PROGRAM.
Paul Drakeford¹, Jonathan Tan¹, Shu Qi Tham¹, Jia Li Kwek¹, Aruni Seneviratna²
¹Anaesthesiology, ²Clinical Research Unit, Tan Tock Seng Hospital, Singapore, Singapore

Objectives:
Recent evidence suggests that there is considerable variation in perioperative fluid administration in patients undergoing abdominal surgery, and that this variability can be independent of a patient's illness or preferences. Furthermore, the variability has been shown to increase cost and rate of complications in colorectal surgery. The consensus statement for anaesthesia practice published by the ERAS group recommends a perioperative near-zero fluid balance (3 ± 2ml/kg/hr). In our tertiary hospital, the ERAS program was implemented in 2016 however an audit of intraoperative fluid administration during that year showed marked variability in intraoperative fluid administration. An education program was undertaken at the end of 2016 with the aim of reducing variability.

Methods:
We performed a retrospective medical record review to compare similar cases within our ERAS program in the year prior and the year after the education intervention. To limit the number of confounders in our study we selected all consecutive laparoscopic anterior resections (LAR) that did not involve extended operations (eg. liver resections) and with blood loss less than 300mls. We extracted rates of intraoperative fluid administered to these patients on a mls/kg/hr basis. Data was analysed using Stata.

Results:
There were 115 patients who underwent an uncomplicated LAR with minimal blood loss in 2016 and 101 patients in 2017. There was a significant reduction in the mean amount of fluids given and the variability from to 2016 to 2017 (4.51mls/kg/hr (SD 2.14) vs 2.64 mls/kg/hr (SD 1.26); p<0.001). The 2 groups were similar in age and co-morbidities. See Figure 1 for box plot of total IV fluid volume by year.

Conclusion: A simple evidence-based education program was able to achieve a reduction in the variability and mean amount of intraoperative fluids given to patients undergoing a LAR within an ERAS program. Further research is needed to determine if this has led to a change in the rate of complications such as acute kidney injury and postoperative ileus.

Disclosure of Interest: None Declared
DEVELOPING A SMARTPHONE APP TO IMPROVE PATIENT ADHERENCE TO ERAS PROTOCOL

Josep M. Sole-Sedeno ¹, Marcos Blanco², Ester Miralpeix¹, F. Xavier Medina Luque³, Alicia Aguilar-Martinez³, Sonia Gayete¹, Antoni Paya¹, Gemma Mancebo¹

¹Obstetrics and Gynecology, Hospital del Mar, ²IT, Multimedia and Telecommunication Department, ³Faculty of Health Sciences, Universitat Oberta de Catalunya, Barcelona, Spain

Objectives: To create a mobile application that will inform and guide the patient during the surgical process that she will be attending for the treatment of a gynecologic cancer. The app will also allow contacting the faculty to ask for doubts and send information about the recovery.

Methods: Application is programmed for devices running Android OS (version 4.0 and above). A server backend works with the application to be able to update the information given to the user, receive the questions and answer them, and receive information about the recovery process (movement and food). Initially the app downloads all the information from the server to be fully functional. Later every time the user opens it, the app will check if there are any updates to download or not. A second phase will consist in undergoing interviews with patients already treated to improve the design and functionality before beginning a pilot test.

Results: The application has been programmed from September 2017 to January 2018 as the end of an informatics degree project. The main menu consists in “Initial Information”, “Studies to be performed”, “Surgery” and “Recovering”. From the main screen the user can send requests or questions to the medical team and send information. Initially all the information is text only, in colloquial language, although the app is prepared for storing images. The medical staff using the server that stores the information can update all these items. The app explains to the patient the illness, how will be treated, the staff she will know during the process (nurses and doctors), show her the places where she will be (operating and hospital room), and the prehabilitation and ERAS protocol instructions (exercises, improving nutrition, stop smoking, etc). The information the patient can contribute is related to movement (if she has waken app, walk around, how many time) and eating (ability to take a photo before and after the meal to assess the food intake, and comments about it).

Conclusion: We managed to build an app to guide the patient around the surgical process. Although we think it can be very useful, a testing phase is now necessary to improve it and evaluate the real functionality.

Disclosure of Interest: None Declared
THE USE OF PREDICTIVE MODELING FOR PROLONGED HOSPITAL LENGTH OF STAY FOR THE DEVELOPMENT OF AN ENHANCED RECOVERY AFTER SURGERY PROGRAM FOR PATIENTS UNDERGOING CYTOREDUCTIVE SURGERY WITH/WITHOUT HYPERThERMIC INTRAPERITONEAL CHEMOTHERAPY

Jula Veerapong 1, Bradley H. King 1, Joel M. Baumgartner 1, Kaitlyn J. Kelly 1, Andrew M. Lowy 1, Rodney A. Gabriel 2

1Surgery, 2Anesthesia, University of California San Diego, La Jolla, United States

Objectives: Cytoreductive surgery (CRS) with/without hyperthermic intraperitoneal chemotherapy (HIPEC) is used to treat peritoneal surface malignancies from appendiceal, colorectal, mesothelial, and gynecologic origins. Patients undergoing CRS are often subjected to multi-visceral resections and have prolonged hospital length of stay (LOS) compared to those undergoing other abdominal procedures. Predictive modeling was performed to identify factors associated with prolonged LOS in order to focus our efforts in the development of an ERAS protocol.

Methods: This is a retrospective single institution study analyzing patients undergoing CRS with/without HIPEC. The primary outcome was prolonged LOS, defined as greater than median LOS. Multivariable logistic regression was performed and the performance of the model was assessed using k-folds (k=10) cross-validation. Area under the receiver operating characteristic curve (AUC) and the Hosmer-Lemeshow (HL) test were calculated to determine discriminatory ability and goodness-of-fit, respectively. Odds ratio (OR) and 95% confidence interval (CI) were reported for each covariate.

Results: Final analysis included 464 procedures. The median (25%,75% quartiles) LOS was 10 days (7, 12 days). Factors predictive of prolonged hospital LOS included: number of prior resections, presence of symptomatic peritoneal metastasis, number of prior abdominal surgeries, preoperative peritoneal cancer index, intraoperative estimated blood loss, splenectomy, and hepatic parenchymal resection. The presence of hepatic parenchymal resection had the highest odds for prolonged LOS (OR 3.04, 95% CI 1.51 – 6.13, p = 0.002). Model performance demonstrated adequate discrimination (AUC = 0.751) and goodness-of-fit (HL test, p>0.05).

Conclusion: While ERAS protocols are well-established for patients undergoing gastrointestinal surgery, there is no standardized approach in the perioperative management of CRS patients. The heterogeneity with respect to histopathologic origin and extent of visceral resection creates a unique challenge in developing a comprehensive protocol. Predictive modeling may be helpful in the creation of an ERAS protocol for CRS with/without HIPEC by identifying the patients at risk for prolonged LOS.

Disclosure of Interest: None Declared
POSTOPERATIVE PAIN AFTER ELECTIVE COLORECTAL SURGERY
Margaretha Lindberg1, Johan Svensson2, Karl A. Franklin1
1Department of Surgical and Perioperative sciences, Surgery, 2Department of Statistics, Umeå University, Umeå, Sweden

Objectives: To study the degree of pain after elective colorectal surgery among patients treated within an ERAS perioperative program, and to identify risk factors for postoperative pain.

Methods: 434 of 449 eligible patients undergoing colon- or rectal surgery were prospectively included and registered in ERAS Interactive Audit System database. Patients scored maximum pain on day of surgery and on the following 3 postoperative days according to the Numeric Rating Scale (NRS) graded from 0-10. All patients received acetaminophen, and short- and long acting opioids. Epidural analgesia was given 2-4 days after open surgery, and then opioids. Spinal analgesia was given during minimally invasive rectal surgery. The target of analgesia was a NRS score of ≤ 3.

Results: Mean maximum NRS was 3.8 (3.3) on day of surgery (Table). The variability of pain between patients was, however, large and 50 % of patients scored NRS ≥ 4 and 26 % scored severe pain NRS ≥ 7 on day of surgery, while 31 % scored no pain at all. Postoperative NRS on day 1-3 are given in the Table. Young age was related to more pain on day of surgery and postoperative day 1 and 2 in a multivariate analysis. Complications were related to more pain on postoperative day 3, while diabetes mellitus was related to less pain on day of surgery. Patients operated with minimal colonic resection vs. open resection had more pain on day of surgery and less pain on postoperative day 2 and 3. Gender, BMI, smoking, ASA class, cancer, CRP and radio-chemotherapy were not related to the pain score.

Table. Distribution of pain score (NRS) on postoperative day (POD) 0-3

<table>
<thead>
<tr>
<th>Day of surgery</th>
<th>Mean (SD) NRS</th>
<th>NRS = 0</th>
<th>NRS ≥ 4</th>
<th>NRS ≥ 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative day 3</td>
<td>4.2 (3.0)</td>
<td>24 %</td>
<td>51 %</td>
<td>21 %</td>
</tr>
<tr>
<td>Postoperative day 2</td>
<td>4.8 (3.0)</td>
<td>18 %</td>
<td>59 %</td>
<td>25%</td>
</tr>
<tr>
<td>Postoperative day 1</td>
<td>4.8 (3.0)</td>
<td>12 %</td>
<td>64 %</td>
<td>35%</td>
</tr>
<tr>
<td>Day of surgery</td>
<td>3.8 (3.3)</td>
<td>31 %</td>
<td>50 %</td>
<td>26%</td>
</tr>
</tbody>
</table>

Conclusion: About half of the patients score more than the target for postoperative pain, and about a quarter score severe pain despite following an evidence based perioperative program for analgesia with individually adjustments. Young age is a strong risk factor for postoperative pain already on the day of surgery, while patients with diabetes mellitus have less pain. Complications of surgery is related to pain on postoperative day 3.

Disclosure of Interest: None Declared
IS ORAL ACETAMINOPHEN COMPARABLE TO INTRAVENOUS ACETAMINOPHEN WHEN USED AS A PREMEDICATION IN AN ERAS PATHWAY?

Katherine Cain¹, Maria D. Iniesta², Tina Suki², Ashley Siverand², Camila Corzo², Bryan Fellman³, Javier Lasala⁴, Larissa A. Meyer², Pedro T. Ramirez²

¹Pharmacy, ²Gynecologic Oncology and Reproductive Medicine, ³Biostatistics, ⁴Anesthesia and Perioperative Medicine, MD ANDERSON CANCER CENTER, Houston, United States

Objectives: Upon initiating an enhanced recovery after surgery (ERAS) program, our preemptive pain management included intraoperative intravenous (IV) acetaminophen. Studies between IV and oral acetaminophen are lacking and have yet to demonstrate a clinically significant benefit for IV acetaminophen. The cost of IV acetaminophen is ~800x more than the oral formulation based on average wholesale price (AWP). Our goal is to determine if IV acetaminophen is comparable to oral acetaminophen in terms of postoperative pain and opioid consumption within an ERAS program.

Methods: Data was collected prospectively on consecutive patients undergoing open gynecologic surgery. We compared patients receiving IV acetaminophen to pts receiving oral acetaminophen. Patients identified as chronic opioids users were excluded from the analysis. We compared the highest reported postoperative care unit (PACU) pain score and the total morphine equivalent daily dose (MEDD) consumed on postoperative day (POD) 0 and POD 1. We used descriptive statistics to summarize variables of interest.

Results: A total of 245 patients were included with 120 receiving IV acetaminophen and 125 receiving oral acetaminophen. Baseline patient demographics including age, body mass index, ECOG, ASA, and CCI were similar across both groups. There were no significant differences in the indication for surgery. Highest pain reported in the PACU was higher in the oral acetaminophen group than in the IV group (mean 5.2 vs. 4.2; p = 0.01). However, there were no significant differences between the groups in terms of total MEDD on POD 0 (median (min-max) 5.6 (0-180) (IV) vs 10 (0-235.6) (oral) (p=0.235) or POD1 (median (min-max) 7.5 (0-211) (IV) vs 7.5 (0-165) (oral) (p=0.7).

Conclusion: There is no difference in postoperative opioid consumption between patients who received preoperative oral vs. IV acetaminophen. Although a difference in patient’s reported highest PACU pain was detected it is unlikely clinically significant given that it did not change patients’ consumption of opioid pain medication. Significant cost savings with oral acetaminophen are anticipated.

Disclosure of Interest: K. Cain: None Declared, M. Iniesta: None Declared, T. Suki: None Declared, A. Siverand: None Declared, C. Corzo: None Declared, B. Fellman: None Declared, J. Lasala: None Declared, L. Meyer Grant / Research support from: K07-CA201013, P. Ramirez: None Declared
THE IMPACT OF TYPE 2 DIABETES MELLITUS (T2DM) ON OUTCOMES IN ELECTIVE COLORECTAL SURGERY IN ENHANCED RECOVERY AFTER SURGERY (ERAS).
Katrina Marie F. Villamiel¹, Marianna Ramona S. Sioson²
¹Endocrinology, ²Nutrition, The Medical City, Pasig, Philippines

Objectives: To determine whether Type 2 diabetes mellitus is associated with longer length of stay and greater complication rate among patients who underwent colorectal surgery in The Medical City (TMC) ERAS pathway.

Methods: In a cross-sectional study of adults who underwent elective colorectal surgery under the TMC ERAS pathway from January 1, 2016-October 31, 2017, we compared patients without T2DM and patients with T2DM. The primary outcome was post-operative length of stay. Secondary outcomes were post-operative complications, reoperation rate, pneumonia and wound infection. Using Stata SE version 13, we used independent t-test for continuous variables and Fisher's exact test for categorical variables and a level of significance of 5%.

Results: A total of 140 patients were included (104 without T2DM and 36 in the T2DM group). Mean post-operative length of hospital stay was 6.3 +/- 4.9 days in patients without T2DM and 5.7 +/- 4.0 days in the T2DM group (p=0.51). There was no significant difference in length of stay, complications, reoperation rate, pneumonia or wound infection between groups. Among patients with T2DM, preoperative glycemic control did not affect length of stay.

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>no Type 2 DM (n=104)</th>
<th>Type 2 DM (n=36)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharged within 30 post op days –no. (%)</td>
<td>104 (100)</td>
<td>34 (97.1)</td>
<td>0.25</td>
</tr>
<tr>
<td>Post-op length of hospital stay (days)</td>
<td>6 ±3 (4.9)</td>
<td>5 ±7 (4.0)</td>
<td>0.51</td>
</tr>
<tr>
<td>Complications during primary stay –no. (%)</td>
<td>3 (32.7)</td>
<td>1 (31.4)</td>
<td>0.53</td>
</tr>
<tr>
<td>Reoperation rate –no. (%)</td>
<td>6 (6.7)</td>
<td>4 (11.1)</td>
<td>0.28</td>
</tr>
<tr>
<td>Pneumonia –no. (%)</td>
<td>3 (2.9)</td>
<td>3 (6.6)</td>
<td>0.17</td>
</tr>
<tr>
<td>Wound infection – no (%)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Conclusion: Type 2 diabetes mellitus was not associated with longer length of stay nor greater complication rate among patients who underwent colorectal surgery under the TMC ERAS pathway.

Disclosure of Interest: None Declared
IS A QUADRATUS LUMBARUM BLOCK SUPERIOR TO A TRANSVERSUS ABDOMINI PLANE BLOCK FOR ANALGESIA IN LAPAROSCOPIC NEPHRECTOMIES?

Katrine Thorup, Thomas Gill, Antony Ratnasingham, Wendy Caddye, Paul Smith, Despoina Liotiri

Department of Anaesthesia, East Sussex Healthcare NHS Trust, Eastbourne; Department of Anaesthesia, Brighton and Sussex University Hospitals NHS Trust, Brighton; Department of Anaesthesia, Guy's and St. Thomas NHS Trust, London, United Kingdom

Objectives: Regional anaesthetic techniques have previously been shown to be effective in reducing opioid requirements post laparoscopic nephrectomies. This study aimed to evaluate whether a Quadratus Lumborum (QL) or Transversus Abdominis Plane (TAP) block is superior in patients undergoing laparoscopic nephrectomies.

Methods: A retrospective study investigated all laparoscopic nephrectomies over fourteen months at a UK teaching hospital. Patient records were studied for the type of anaesthesia received including block type, analgesia requirements post-operatively as well as pain scores using numeric rating scale (NRS) and length of hospital stay. Laparoscopic nephrectomies were defined as elective partial or radical nephrectomies in the enhanced recovery programme. Open nephrectomies were excluded along with patients whom had local anaesthetic infiltration by surgeons or other neuroaxial anaesthesia. The choice of block was based on the preference of the consultant anaesthetist.

Results: Overall 58 patients were eligible, 67% received a TAP block (n = 39) whereas 33% received a QL block (n=19). Patients who received a QL block had a 44% reduction in mean opioid analgesia requirement at day one (22.3 mg compared to 39.8mg in the TAP group). This was also demonstrated by the mean pain scores which were reduced by 48% on day one from 3.8 (TAP) to 2.0 (QL). There was a reduction in mean length of stay of 18% (half a day) in the QL group. Opioid analgesia requirements in recovery were similar in both groups (15.1mg) and there were no complications associated with either anaesthetic technique.

Conclusion: Regional anaesthesia is an important tool in enhanced recovery pathways with focus on optimizing analgesia whilst sparing opioids. Although limited, this data suggests that a quadratus lumborum block may be superior to a transversus abdominis plane block when performed by an anaesthetist preoperatively. A QL block appears to lead to a greater reduction in mean opioid consumption post operatively and thereby shorter hospital stay. More data is needed before recommending one technique as the safest regional anaesthesia technique remains the one the anaesthetist has more confidence performing.


Disclosure of Interest: None Declared
CAN WE BETTER PREPARE PATIENTS PRIOR TO MAJOR ONCOLOGY SURGERY WITHIN AN ERAS PROGRAM?

Kelly Mayson1, Tracey Hong2, XinYang Huang3, Lindsey Arrick1, Jacqueleine Trudeau1
1Department of Anesthesia and Perioperative Care, Vancouver General Hospital, Vancouver, 2Quality and Patient Safety, Vancouver Coastal Health, Vancouver, British Columbia, 3Family Practice, University of Alberta, Edmonton, Canada

Objectives: ERAS protocols improve care and decrease complications. Preoperative risk factors such as anemia, smoking, and hyperglycemia are associated with increased morbidity, mortality and length of stay. The preoperative period is an optimal time to identify and intervene upon these modifiable risk factors. Our aim was to delineate the incidence of these risk factors and to ensure that high risk patients were identified and optimized while on the surgical waitlist.

Methods: We performed a retrospective review of our local ERAS, ACS NSQIP, and Perioperative Blood Management Program (PBMP) databases from 2013-2017 to obtain the incidence of smoking (in the prior 12 months prior to surgery), and diabetes. Provincial and hospital lab results were used to collect HbA1c. The incidence of preoperative anemia was based on WHO definition of Hb<120 in females and Hb<130 in males. We assessed compliance to established PBMP referral criteria and efficacy of treatment.

Results: Baseline data from 787 patients undergoing major oncology surgery demonstrated that preoperative anemia is common, and the requirement for a transfusion was significantly higher in the patients with an anemia at the time of admission. (see Table). Patients managed by PBMP had an average 5.9 g/l increase in Hb; however only 43% of patients that met referral criteria were referred to the program. 12% of patients admitted to smoking in the year prior to surgery. Recent screening of HbA1c in all ERAS cases found that 8.3% (6/72) of cases had unrecognized diabetes (HbA1C > 6.0). 15% of all patients were diabetic (N=139), with 50.4% of these cases having a preoperative HbA1C > 7.0, and 13.7% >8.5.

<table>
<thead>
<tr>
<th></th>
<th>Radical N=222</th>
<th>Cystectomy N=222</th>
<th>Colorectal N=422</th>
<th>Gynecology Oncology N=143</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoker</td>
<td>15%</td>
<td>10.8%</td>
<td>12.3%</td>
<td></td>
</tr>
<tr>
<td>Anemic at the time of surgery</td>
<td>37.8%</td>
<td>22.6%</td>
<td>34.9%</td>
<td></td>
</tr>
<tr>
<td>Transfusion Rate</td>
<td>26.6%</td>
<td>8.8%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Transfusion Rate in Anemic Patients</td>
<td>38.9%</td>
<td>21.4%</td>
<td>34.0%</td>
<td></td>
</tr>
<tr>
<td>HbA1c 7.1-8.5</td>
<td>40.9%</td>
<td>41.1%</td>
<td>13.8%</td>
<td></td>
</tr>
<tr>
<td>HbA1c &lt;8.5</td>
<td>13.5%</td>
<td>16.1%</td>
<td>18.2%</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: There is significant room for further optimization within our ERAS program. We have created a multidisciplinary team to review the process of surgical booking and early review of abnormal bloodwork to ensure that patients are triaged for optimization. We have incorporated further information into our patient education materials to encourage self management of diabetes, and to highlight the importance of iron deficiency anemia treatment and promoting smoking cessation.

Disclosure of Interest: None Declared
Objectives: Monitor patient activity prior to pancreaticoduodenectomy (PD) and through POD#60 to establish baseline activity levels, time to return to baseline, and compare activity levels to average length of stay (LOS).

Methods: Implementation of ERAS® guidelines for PD patients led to development of new initiatives. To better capture patient activity levels during post-op period, a pilot study utilizing Fitbit technology was initiated. Patients were invited to take part in study during preoperative education class. Patients required a smart phone or tablet to be eligible. The ERAS nurse assigned Fitbit Flex devices to participating patients and assisted with device registration process with Fitbit and organization’s own tracker application. Patients received one-on-one device education and a reference sheet. Patients were instructed to wear device daily beginning at education class and through POD#60. ERAS nurse tracked daily patient activity and contacted patients when activity levels decreased to assess patient recovery status and assist with troubleshooting device as necessary. There were five activity levels defined by organization’s tracker application: Inactive (<2500 steps/day), Sedentary (>2500 steps/day to <5000 steps/day), Semi-Active (>5000 steps/day to <7500 steps/day), Active (>7500 steps/day to <12500 steps/day), and Very Active (>12500 steps/day). After POD#60, patients were sent materials to return device.

Results: 22 patients completed pilot study. Average age of participants was 62 years old. 41% (9/22) returned to baseline activity by end of pilot. At POD#30 LOS for Inactive patients was 11 days, Sedentary patients 8 days, Semi-Active and Active patients 5 days. There were no Very Active categorized patients. Patient compliance in wearing device daily decreased around POD#30 with 50% of patients recording daily activity through POD#60. At end of study, LOS for Inactive patients and Sedentary patients was 9 days, Semi-Active 5 days, and Active 8 days.

Conclusion: Increased activity levels following major abdominal surgery leads to decreased LOS compared to less active patients. Utilizing an activity tracker is a beneficial method in collecting patient data to effectively monitor a patient’s recovery progress and reinforce importance of participating in activity.

Disclosure of Interest: None Declared
ENHANCING RECOVERY FROM HOSPITAL TO HOME: REDUCING POSTOPERATIVE READMISSIONS THROUGH NURSE-DRIVEN PHONE CALLS
Kimberly Campagna¹, Regina Ragland¹, Bethany Sarosiek¹
¹ERAS, University of Virginia Medical Center, Charlottesville, United States

Objectives: Several recent randomized trials have shown that readmissions can be preventable with improved patient education and effective post discharge follow-up. With the aim of improving post-discharge care to prevent hospital readmissions, we sought to implement follow-up phone calls for patients enrolled on a thoracic ERAS protocol.

Methods: Following initiation of a thoracic ERAS protocol, postoperative discharge phone calls were initiated in for all thoracic ERAS patients. A baseline readmission rate of 6% was identified (9/152 patients) over a 12 month period. An interdisciplinary team consisting of ERAS nurses, surgeons, anesthesia providers convened to establish a plan to counsel and triage patient concerns in the immediate post-discharge period. A standard phone script was developed to target common reasons for readmission after thoracic surgery. Calls were initiated 48-72 hours after discharge; no patients were excluded.

Results: Forty-two post-discharge phone calls were attempted; 36 patients were reached and available for discussion. The most common themes identified during the follow-up calls included pain management (22%); constipation (11%); shortness of breath (7%); concerns about surgical incisions (9%); and issues with chest tubes (7%). Following identification of these themes, the interdisciplinary team reconvened to develop evidence-based education plans for staff and patients related to bowel management, the standardized use of multimodal discharge pain medication, and improved discharge education related to chest tube management. The readmission rate following implementation of these practice interventions was 8% (2/24 patients) over a 3 month period, with no readmissions occurring within the last 60 days following implementation.

Conclusion: Consistent use of follow-up phone calls for thoracic ERAS patients has helped to identify key opportunities for standardizing patient and staff education and improving post-discharge care. Key learning from post-discharge phone calls has driven large-scale process improvement through interdisciplinary collaboration and evidence-based review.

Disclosure of Interest: None Declared
ANEMIA SEVERITY AFFECTS OUTCOMES OF PATIENTS UNDERGOING COLORECTAL CANCER SURGERY WITHIN AN ENHANCED RECOVERY AFTER SURGERY PROGRAMME

Kwang Yeong How¹, Yu Liang Lim², Xiao Jin Zhang¹, Qin Yi Lee¹ on behalf of TTSH ERAS Core Team
¹Tan Tock Seng Hospital, Singapore, ²Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore

Objectives: Anemia has been shown in several studies to impact complication rates and length of stay for patients undergoing colorectal cancer surgery. However, there is still no consensus on optimization of anemia pre-operatively within the Enhanced Recovery after Surgery (ERAS) colorectal surgery protocol. Our study aims to determine whether severity of anemia affects colorectal cancer surgery outcomes within an ERAS protocol.

Methods: Data prospectively collected in the ERAS Interactive Audit System (EIAS) for patients undergoing elective colorectal cancer surgery from March 2016 to August 2017 in a tertiary hospital in Singapore was analyzed retrospectively. Based on the classification for anemia severity as defined by World Health Organization (WHO), patients with mild anemia were compared to those with moderate to severe anemia. Risk adjustment was performed for possible confounders using propensity score matching. The primary outcome measure was length of stay. Secondary outcomes were post-operative complications and readmission rates.

Results: A total of 271 elective colorectal cancer resections were performed between March 2016 to August 2017, out of which 156 (57.6%) patients were identified to be anemic. 88 (56%) patients had moderate to severe anemia. Patients with mild anemia had a shorter length of stay as compared to those with moderate to severe anemia (7.3 vs 10.2 days, p=0.04). In addition, it was found that patients with moderate to severe anemia had a 2.42 (95% CI 1.35 to 4.33, p=0.001) times risk of complications as compared to the mild anemia group. Using general linear model, it was also demonstrated that patients who received blood transfusion had their stay extended by an average of 1.59 (p<0.05) days.

Conclusion: Our results suggest that even within an ERAS Program, preoperative moderate to severe anemia is associated with worse clinical outcomes. As such, preoperative optimization of hemoglobin in patients with moderate to severe anemia should be an important part of the preoperative management of patients. Our team is in the process of developing preoperative iron infusion protocols for optimizing anemia prior to colorectal cancer surgery.

Disclosure of Interest: None Declared
Objectives: One of the key recommendations in Enhanced Recovery After Surgery (ERAS) is early patient mobilization. Early mobilization is said to be the most effective and substantial nursing intervention in reducing post-operative complications (Morris et al, 2010). However, in addition to increasing nurses’ workload, early mobilization carries the risk of inpatient falls as well. We outline the strategies taken in our institute to implement early mobilization.

Methods: There are no clear guidelines in assessing patient’s safety for mobilizing. Our multidisciplinary team developed a set of criteria to guide nurses in early patient mobilization. Criteria included: patient pre-morbidly independent in mobilization, ability to obey commands, limb muscle power > 4, and normal vital signs. Patients also needed a pain score less than 5 at rest, and absence of any cardiac symptoms. Another strategy that improved compliance was nurse-led counselling of patients and ward staff. Patients were informed of what to expect, and scheduling was streamlined in tandem with ward nurses to ensure that existing nursing workload interfered minimally with carrying out early mobilization of patients.

Results: Data collected from March 2016 till December 2017 showed a 100% compliance rate in early mobilization of patients who fulfilled the criteria. This was associated with reduced length of stay from 7 to 6 days and lower complication rate of 38.5% vs 47.2%. 30 day readmission rate was also reduced from 8.4% to 7.4%.

Conclusion: In conclusion, nurse-led strategies play a key role in ensuring early mobilization of postoperative patients. The criteria for nurse-led mobilization and schedule for mobilization were successful in reducing post-operative complications. Getting stakeholders involved in the action plan proved to be a crucial factor in ensuring compliance.


Disclosure of Interest: None Declared
ADOPTION OF AN ENHANCED RECOVERY PROGRAM LEADS TO DECREASED OPIOID USE AND ASSOCIATED PATIENT-REPORTED OPIOID RELATED ADVERSE SYMPTOMS

Larissa A. Meyer*, Javier Lasala, Maria D. Iniesta, Qiuling Shi, Katherine E. Cain, Camila Corzo, Terri Earles, Melinda Harris, Xin S. Wang, Pedro T. Ramirez

1 Gynecologic Oncology and Reproductive Medicine, The University of Texas MD Anderson Cancer Center, Houston, Texas
2 Anesthesiology and Perioperative Medicine, The University of Texas MD Anderson Cancer Center, Houston, Texas
3 Symptom Research, Pharmacy Clinical Programs, The University of Texas MD Anderson Cancer Center, Houston, United States

Objectives: Opioid analgesics have long been a mainstay of postoperative pain management but are associated with adverse effects including bowel dysfunction, nausea, dry mouth, sedation and cognitive effects which can affect length of stay as well as the quality of life in the immediate postoperative setting. The objective of this study was to evaluate the effect of introduction of an enhanced recovery after surgery (ERAS) program on opioid consumption, patient’s quality of life and opioid-related symptom burden in the perioperative setting.

Methods: Perioperative patient-reported symptom burden was measured for women undergoing laparotomy on the gynecologic oncology service at a tertiary cancer center pre- and post-implementation of ERAS. ERAS patients enrolled between November 2014-October 2016 were compared with historical controls (May to October 2014). Symptoms were assessed using the M.D. Anderson Symptom Inventory- Ovarian Cancer module (MDASI-OC), a 27-item validated tool. The MDASI-OC was administered as a preoperative baseline, and daily while hospitalized. Opioid medication was converted to a morphine equivalent daily dose (MEDD). Linear mixed-effect modeling was performed.

Results: 226 pts on the ERAS pathway were compared to 67 controls. There were no significant differences in age, primary tumor type, surgical complexity score, history of chronic opioid use or operative time. Patients on the enhanced recovery program utilized significantly less opioid pain medication intraoperatively (60 vs. 100 MEDD), p<.0001. There was a 74% reduction in opioid intake during the first four days postoperatively without an increase in reported pain scores. The top 5 most highly rated symptoms in the hospital were pain, abdominal pain, fatigue, dry mouth and drowsiness. Pts on the ERAS pathway reported significantly less fatigue, disturbed sleep, drowsiness, or difficulty with paying attention and memory. There was no difference in dry mouth, vomiting, nausea, or constipation.

Conclusion: Pts on an ERAS program can significantly reduce opioid consumption without worsening patients’ subjective feeling of pain. Downstream benefits of opioid reduction may also include less fatigue, drowsiness and cognitive impairments which influence patient’s self-reported well-being during surgical recovery.

Disclosure of Interest: L. Meyer Grant / Research support from: NIH K07 CA201013, J. Lasala: None Declared, M. Iniesta: None Declared, Q. Shi: None Declared, K. Cain: None Declared, C. Corzo: None Declared, T. Earles: None Declared, M. Harris: None Declared, X. Wang: None Declared, P. Ramirez: None Declared
CONTINUOUS THORACOLUMBAR FASCIA BLOCK, A NEW PROMISING REGIONAL ANESTHESIA TECHNIQUE FOR ANALGESIA IN MAJOR SPINAL SURGERY

Leense Wagenaar¹, Mike Abu Saris², Hans Donald De Boer³
¹Department of Anesthesiology, Pain Medicine and Procedural Sedation and Analgesia, ²Department of Neurosurgery, Martini General Hospital Groningen, ³Department of Anesthesiology, Pain Medicine and Procedural Sedation and Analgesia, Martini General Hospital Groningen, Groningen, Netherlands

Objectives: Spinal surgical procedures, including posterior lumbar interbody fusion and oncological spinal surgery, are associated with severe postoperative pain. To enhance early functional outcome, adequate pain management is paramount. However, the use of loco regional anaesthesia techniques still seems controversial as hard evidence is lacking. In our hospital wound infiltration with local anaesthetics and multimodal analgesic low opioid approach for these procedures are routine. Our hypothesis was that continuous administration of local anaesthetics simply administered under the posterior thoracolumbar fascia (TLF block) might result in improved analgesia, reduction of opioid use and earlier mobilization.

Methods: After ethics approval we retrospectively analysed four patients who underwent major spinal surgery in whom post procedure wound infiltration catheters parallel to the wound, just below the thoracolumbar fascia were placed using a blind, loss of resistance technique. Primary outcome measures were ASA classification, NRS scores, PONV-scores, opioid use and time to full mobilization.

Results: Four patients could be identified (M/F=3/1, ASA II/III=3/1, age 71.3 y (range 69-74). The NRS scores and opioid consumption are shown in table 1. No patients showed PONV. Full mobilization was achieved at day 1 in three patients and at day 3 in one patient. There were no 30-days readmissions or re-operations reported.

Table 1. NRS scores and opioid use* (mean and range)

<table>
<thead>
<tr>
<th>Patient</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NRS opioids</td>
<td>NRS opioids</td>
<td>NRS opioids</td>
<td>NRS opioids</td>
</tr>
<tr>
<td>Day -1</td>
<td>3 0</td>
<td>6 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>Day 0</td>
<td>0 0</td>
<td>3.5 (3-4) 0</td>
<td>2 0</td>
<td>1.5 (0-3) 0</td>
</tr>
<tr>
<td>Day 1</td>
<td>0 0</td>
<td>2.8 (1-4) 0</td>
<td>10* 0.8 (0-2) 0</td>
<td>1.5 (1-4) 0</td>
</tr>
<tr>
<td>Day 2</td>
<td>0 0</td>
<td>5.3 (3-7) 25</td>
<td>0.2 (0-1) 0</td>
<td>3.0 (2-5) 0</td>
</tr>
<tr>
<td>Day 3</td>
<td>0 0</td>
<td>3.5 (2-5) 25</td>
<td>0.2 (0-1) 0</td>
<td>2.2 (2-3) 0</td>
</tr>
</tbody>
</table>

*Oxycodone daily dose in mg
* catheter accidentally removed by patient

Conclusion: The use of a continuous thoracolumbar fascia (TLF) block led to low pain scores, reduced time to mobilization and low opioid use in the first four days after the procedure. Continuous TLF block may be a promising new technique for enhanced recovery after major spinal surgery.

Disclosure of Interest: None Declared
Enhanced Recovery Program for Oncologic Gastric Surgery. Compliance and Outcomes in an Italian, Prospective, Multicenter Study

Luca Gianotti¹, Marta Sandini¹, Stefano De Pascale², Stefano Rausei³, Jacopo Weindelmayer⁴, Lapo Bencini⁵, Riccardo Rosati⁶, Andrea Corattii⁷, Andrea Sansonetti⁷, Andrea Cussu⁶, Uberto Fumagalli²

¹Surgery, Milano-Bicocca University, Monza, ²Surgery, Ospedale di Brescia, Brescia, ³Surgery, University of Varese, Varese, ⁴Surgery, University of Verona, Verona, ⁵Surgery, University of Firenze, Firenze, ⁶Surgery, University Vita e Salute, Milano, ⁷Surgery, San Camillo Hospital, Roma, Italy

Objectives: The application of enhanced recovery after surgery (ERAS) pathway in patients undergoing gastrectomy for cancer has shown promising results in small Eastern cohorts. Yet, the commonest presenting features of gastric cancer and the patients preoperative risk profile are fairly different from Eastern to Western populations and this may affect compliance. We aimed to evaluate the feasibility of an ERAS program specifically in an Italian cohort, and to examine whether the rate of adherence is predictive of surgical outcomes.

Methods: From April 2015 to July 2017, patients undergoing elective gastrectomy for cancer in 7 Italian centers were enrolled in this prospective study. The ERAS domains were standardized in all centers. The compliance to each item were registered and all data on postoperative course were collected. Any 30-day postoperative complications were a priori defined and their severity was graded per the Clavien-Dindo classifications. Fit for discharge criteria were defined according to the ERAS Society (1). Pre- and intraoperative ERAS items were used to identify predictors of surgical outcomes by the classification and regression tree approach.

Results: Two-hundred-and-ninety patients were evaluated. The overall rate of compliance to the ERAS pathway was significantly higher in patients who did not experience postoperative morbidity, than in those with overall complications (67.6±12.2% vs. 61.3±12.3%, respectively; p < 0.001). A similar trend was observed for major complication (67.0±11.8% vs. 57.3±13.5%; p < 0.001). The rate of adherence to preoperative ERAS domains was predictive of readmission (55.6±28.0% vs. 69.5±28.9%, in those patients who were not readmitted; p = 0.049). By an ensemble subsampling tree method, we found that 4 out 12 pre- and intraoperative ERAS domains - avoidance of preoperative starvation; near-zero balance intraoperative fluid therapy; active warming; no gastric tube – were significantly predictive of uneventful recovery.

Conclusion: Despite lower than previously described in Eastern populations, the overall compliance rate was predictive of postoperative morbidity and readmission following gastrectomy for cancer. A greater weight in affecting surgical outcomes can be attributed to some of the pre- and intraoperative items of the ERAS pathway.

References: 1. erassociety.org

Disclosure of Interest: None Declared
Objectives: The objective of this study has been to measure the efficiency of the fasting abbreviation in surgical patients.

Methods: Patients have been given diet with clear liquids and protein four hours before the surgery, excluding patients with degrees II and III of obesity, glycemia greater than 280 mg/dL, obstructive TGI cancer, emergency surgeries, and the statistical analysis was done through the program Graphpad Prism 5.0.

Results: A total of 4,427 patients were evaluated in 2017 and the fasting of 10% of these patients was abbreviated (n = 441). Patients who have received clear fluids with carbohydrate and protein four hours before surgery have had an average of two days of hospitalization while the remaining patients have had an average of three days hospitalization\[GM1\]. It was observed that patients who have fasted for more than 11 hours have presented more nausea and vomiting compared to those with fasting greater than 11 hours (P <00001 Mann-Whitney test), and none of the patients with abbreviated fasting have had such symptoms. The relative risk for the presence of symptoms is 69 times greater in patients with fasting longer than 11 hours, showing a strong association between longer periods and the presence of nausea and vomiting (P <00001 Chi-square test).

Conclusion: Therefore, the fasting abbreviation have protected patients from the symptoms of nausea and vomiting by decreasing the total fasting time, and have allowed the reduction of hospitalization in one day, modifying the patient's perception of the services provided.


Disclosure of Interest: None Declared
P060
WEARABLE FITNESS TRACKERS FOR MEASUREMENT OF BEHAVIORAL PATTERNS AMONG PATIENTS UNDERGOING RADICAL CYSTECTOMY: A PILOT STUDY ASSESSING FEASIBILITY AND UTILITY
Madeleine L. Burg¹, Shane M. Pearce¹, Daniel E. Zainfeld¹, Saum Ghodoussipour¹, Ankeet Shah¹, Anne K. Schuckman¹, Hooman Djaladat¹, Siamak Daneshmand*¹
¹Institute of Urology, USC/Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, United States

Objectives: Radical cystectomy (RC) is a complicated procedure associated with significant morbidity. Wearable fitness trackers (WFT) offer a novel means of objectively evaluating patient behavioral patterns. We sought to determine capacity for use of these devices to measure patient sleep and activity levels in the perioperative setting.

Methods: Under IRB approval, commercially available WFT devices were given to consenting patients undergoing open or robotic RC. Patients were given a WFT to wear continuously up to 2 weeks preoperatively, in the immediate postoperative period, and up to 2 weeks after discharge. Activity was automatically recorded and measured including total daily steps, calories burned, and sedentary hours. Sleep outcomes included total daily hours asleep and number of awakenings while sleeping. Day of first bowel movement postoperatively was also recorded.

Results: 21 patients were given a WFT for a median of 15 days total (IQR 10-21). Median age was 69 years old (IQR 69-80). Results of captured data are shown in Table 1. Compared to preoperative daily steps, patients reached 11.2% of their baseline on the day prior to discharge and patients averaged 17.6% of preoperative baseline after discharge. When stratifying by those 80 years and older, younger patients had significantly more daily inpatient steps (p=0.036) and postoperative daily calories burned (p=0.028), as well as greater total steps on day prior to discharge (p=0.079). Decreased daily inpatient steps were associated with return of bowel function on postoperative day 3 or later (9% of patients above average daily inpatient steps delayed vs 50% of patients below average delayed, p=0.038).

Table 1. Daily means of activity and sleep variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Preoperative</th>
<th>Inpatient</th>
<th>Postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steps</td>
<td>4,805</td>
<td>898</td>
<td>1,517</td>
</tr>
<tr>
<td>Calories burned</td>
<td>2,327</td>
<td>2,129</td>
<td>1,776</td>
</tr>
<tr>
<td>Sedentary hours</td>
<td>14.78</td>
<td>12.63</td>
<td>17.84</td>
</tr>
<tr>
<td>Hours asleep</td>
<td>5.26</td>
<td>6.66</td>
<td>4.90</td>
</tr>
<tr>
<td>Awakenings per hour asleep</td>
<td>2.27</td>
<td>0.86</td>
<td>1.46</td>
</tr>
</tbody>
</table>

Conclusion: Use of WFT to objectively measure patients’ activity, sleep, and other physiologic variables is feasible. Patients younger than 80 years old show increased activity levels in the postoperative setting. Ongoing prospective evaluation will provide further insights into patient functional status with implications for risk stratification, discharge planning, and perioperative management among patients undergoing radical cystectomy.

Disclosure of Interest: None Declared
THE IMPORTANCE OF NUTRITIONAL SUPPORT IN ENHANCED RECOVERY AFTER SURGERY IN PATIENTS CANDIDATES FOR RADICAL CISTECTOMY.

Mªdolors Muns1, Gemma Llauradó1, Gloria Nohales2, Montse Villatoro1, Julieta Adaglio1, Laia Fontané1, Marta Corcoy3, Juana Flores-Le Roux1, Lluis Cecchini2

1Department of Endocrinology and Nutrition, 2Department of Urology and Kidney Transplantation, 3Department of Anesthesiology and Resuscitation, Hospital del Mar, Barcelona, Spain

Objectives: - To analyze nutritional status of patients affected with invasive bladder cancer at the time of diagnosis, candidates for radical cystectomy through Subjective Global Assessment(SGA-GP).
- To describe the evolution of the nutritional status 3 months after surgical intervention.

Methods: 31 patients diagnosed with bladder cancer who underwent surgical treatment between November 2015 and November 2017 were included. A nutritional assessment was made on a protocolized basis at diagnosis and 3 months after surgery. The protocol included: anthropometric measurements (weight, height, triceps skin-fold, brachial circumference), biochemical parameters (albumin, total proteins and cholesterol), functional tests (dynamometry) and the SGA-GP questionnaire. All of them, were recommended a homemade supplement (20g/protein and 400kcal per day), fifteen days before the surgery.

Results: 31 patients at the time of diagnosis were evaluated, men 77.4%, mean age of 69.8±9.9 years. According to the SGA we found (good nutritional status:74.2%, moderate risk of malnutrition:25.8%, severe malnutrition:0%). During the hospitalization, only 42.3%(n=11) of the patients required nutritional support. There were 32%(n=10) deaths during follow-up.

Table 1. Characteristics of patients evaluated (excluding those with lost follow-up)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-surgery (n=21)</th>
<th>Post-surgery (n=21)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>74.1±8.4</td>
<td>67.7±8.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>27.2±2.7</td>
<td>24.8±2.5</td>
<td>&lt;0.050</td>
</tr>
<tr>
<td>Tricipital skinfold (mm)</td>
<td>17.6±7.0</td>
<td>12.3±5.4</td>
<td>0.034</td>
</tr>
<tr>
<td>Brachial Circumference (cm)</td>
<td>34.0±4.0</td>
<td>28.5±3.0</td>
<td>0.029</td>
</tr>
<tr>
<td>Caloric intake (kcal)</td>
<td>2203±411</td>
<td>2120±525</td>
<td>NS</td>
</tr>
<tr>
<td>Albumin (g/dl)</td>
<td>4.3±0.4</td>
<td>4.0±0.6</td>
<td>&lt;0.050</td>
</tr>
<tr>
<td>Cholesterol (mg/dl)</td>
<td>180±50</td>
<td>141±40</td>
<td>0.042</td>
</tr>
<tr>
<td>Dynamometry (kg)</td>
<td>26.2±7.4</td>
<td>25.0±7.6</td>
<td>NS</td>
</tr>
</tbody>
</table>

Conclusion: The 74.2% of patients with invasive bladder cancer candidates for radical cystectomy had a correct nutritional status at the time of diagnosis, while 25.8% were at risk of malnutrition according to SGA. However, 3 months after surgery, there was a significant worsening of nutritional status, despite maintaining the same caloric intake(before and after surgery), probably derived from the stress response. These results suggest the importance of receiving an adequate and intensive nutritional support in patients candidates for radical cystectomy.


Disclosure of Interest: None Declared
CORRELATION OF COMPLIANCE WITH ENHANCED RECOVERY AFTER SURGERY (ERAS) GUIDELINES AND PATIENT OUTCOMES IN GYNECOLOGIC SURGERY

Maria D. Iniesta¹, Javier D. Lasala², Andrea Rodriguez-Restrepo³, Gloria Salvo¹, Mark F. Munsell⁴, Larissa A. Meyer¹, Pedro T. Ramirez¹
¹Gynecologic Oncology and Reproductive Medicine, ²Anesthesia and Perioperative Medicine, MD ANDERSON CANCER CENTER, Houston, ³Anesthesia and Perioperative Medicine, University of Arizona, Tucson, ⁴Biostatistics, MD ANDERSON CANCER CENTER, Houston, United States

Objectives: Success and sustainability of ERAS programs is based on level of compliance with established guidelines. High levels of compliance have been associated with improved oncologic outcomes. Our aim was to determine the correlation between compliance and postoperative outcomes in an ERAS program in gynecologic surgery at a tertiary center.

Methods: A total of 585 patients who had open gynecologic surgery between 11/1/2014 and 12/31/2016 were included. We analyzed the compliance of the different elements of the protocol (20 individual ERAS components) over the time and its relation with postoperative outcomes (length of hospital stay (LOS), postoperative complications (up to 30 days) and readmission and reoperations rates). We modeled the logit of the probability of having a postoperative complication of any grade within 30 days of surgery as a function of overall compliance.

Results: The overall compliance was 68.1%. The rate of compliance was highest in the postoperative setting (74.5%) compared to preoperative (68.1%) and intraoperative (66.1%). Patients with compliance higher than 80% had significantly less postoperative complications (p < 0.001) and shorter LOS (p < 0.001). Readmission and reoperation rates were not affected by compliance. The ERAS items associated with lower postoperative complications within 30 days were: avoidance of salt water overload (OR=0.40, p <0.0001), early mobilization (OR=0.35, p =0.0002), early oral nutrition (OR=0.37, p <0.0001), and early removal of Foley (OR=0.35, p <0.0001).

Conclusion: Improved compliance with ERAS protocol is associated with better postoperative outcomes. Strategies to increase compliance above our current 70% are being implemented.

Disclosure of Interest: M. Iniesta: None Declared, J. Lasala: None Declared, A. Rodriguez-Restrepo: None Declared, G. Salvo: None Declared, M. Munsell: None Declared, L. Meyer Grant / Research support from: K07-CA201013, P. Ramirez: None Declared
Objectives: The opioid epidemic is a major health care crisis in the United States. Patients receiving an opioid prescription after surgery are 44% more likely to become long-term opioid users. Currently most patients receive a prescription for thirty 5 mg tablets of oxycodone at discharge. Our goal is to determine the morphine equivalent daily dose (MEDD) on day prior to discharge in patients undergoing gynecologic surgery on an ERAS program in order to develop departmental guidelines for discharge opioid prescriptions.

Methods: Data was collected prospectively on consecutive patients undergoing open gynecologic surgery between 11/03/14 and 04/30/16 at our institution. Patients identified as chronic opioids users were excluded from the analysis. We used descriptive statistics to summarize variables of interest separately for those subjects by their total MEDD values on their day before discharge.

Results: A total of 488 patients were included in the analysis: 44.5% (217/488) of patients took less than 5 MEDD the day before discharge, 38.3% (187/488) took 5.1-30 MEDD and 17.2% (84/488) took >30 MEDD. Age, Charlson Comorbidity Index, and BMI were all associated (p < 0.05) with MEDD day before discharge categories. Older patients with more comorbidities required a lower MEDD on the day before discharge. The amount of MEDD used had no correlation with the type of surgery (benign vs. malignant), ECOG score or ASA physical status.

Conclusion: A total of 44.5% of patients required less than 5 MEDD the day before discharge. Amount of opioid prescribed may be significantly reduced if tailored to individuals’ opioid consumption prior to discharge. Our future study will use this data to implement guidelines for post-operative opioid prescriptions and evaluate total opioid use at home based on MEDD consumption day prior to discharge.

Disclosure of Interest: None Declared
NEW PARADIGMS IN NURSING WITH THE IMPLEMENTATION OF THE ENHANCED RECOVERY AFTER SURGERY PROGRAM ERAS AT BENEMÉRITO HOSPITAL CIVIL FAA GUADALAJARA, JALISCO, MEXICO.

maria S. jimenez 1, Daniel Enciso 1, Ruben Rodriguez 1, jose Ramirez 1, Catherine Cabrera 1, Jorge Reynoso 1 on behalf of ERAS Mexico Group

1Hospital Civil de Guadalajara, guadalajara, Mexico

Objectives: To promote a paradigm shift in Nursing care, with the Enhanced Recovery After Surgery program (ERAS), testing the safety of its application in post-surgical elective colorectal surgery patients.

Methods: The present study is retrospective, observational, cross-sectional and analytical from March 2016 - March 2017. ENCARE Audit system (EIAS) was registered for analysis. We compared the implementation and nursing care of pre-ERAS and post- ERAS, under ERAS guidelines and protocol in elective colorectal patients, consecutive, ≥ 20 years, at a public hospital in Guadalajara, Mexico. We followed them up for 30 days after discharge. We used demographic statistics to evaluate the satisfaction of nursing care.

Results: 70 patients were analyzed during the aforementioned period, 48 pre-ERAS, 32 patients in the study group, 20 men (62.5%) and 12 women (37.5%), average age 56.69 years (minimum 20 maximum 79). All patients in the control group had education prior to hospital admission (self-care), follow-up, humanized care in the postoperative period and stoma advice. 90.6% (n 29) received oral maltodextrins 2 hours before the procedure, no bowel preparation was performed in 81.3% (n 26), all patients received intravenous antibiotic and antithrombotic prophylaxis. In the postoperative period, comprehensive holistic care and control were provided in accordance with best practices; a satisfaction survey was used, guaranteeing quality care and continuous improvement in the processes.

Conclusion: The multi-disciplinary work of ERAS team and the nursing care that is provided to the person, holistically in the three phases; before, during and after the colorectal surgery has given results and improvements of patients. Especially satisfaction, an irrevocable element because in the Civil Hospital of Guadalajara Fray Antonio Alcalde “The health of our people is the supreme law” (La Salud del Pueblo es la Suprema Ley)

Disclosure of Interest: None Declared
ERAS-APPTIMIZE: IMPROVING REPORTED QUALITY OF LIFE BY ENHANCING MONITORED COMPLIANCE TO THE ERAS CARE PATHWAY BY USING EHEALTH. THE PATIENT IN THE PROCESS.
Marilou Jansen1, Anneloek Rauwerdink1, Corianne J.A.M. de Borgie2, Christianne J. Buskens1, Willem A. Bemelman1, Marlies P. Schijven1
1Surgery, 2Clinical Research Unit, Academic Medical Center Amsterdam, Amsterdam, Netherlands

Objectives: Perioperative care within colorectal surgery is systematically defined in the ‘Enhanced Recovery After Surgery’ (ERAS) program. This program aims to improve perioperative care to ensure early but safe release from the hospital. To ensure achievement of individual elements, involvement of both healthcare provider and patient is crucial. Active involvement of patients in their perioperative care pathway is known to influence reported Quality of Life. Optimization of protocol adherence resulting in better reported Quality of Life is to be found by involving the patient. Aim of this study is to investigate whether a mobile application can stimulate a patient to participate actively in the perioperative care pathway, resulting in better reported Quality of Life. Primary outcome of this study is reported Quality of Life. Secondary outcomes are patient satisfaction, quantification of protocol compliance to the individual ERAS elements and its influence on length of hospital stay, number of complications and readmission rates.

Methods: This is a multicenter randomized controlled trial. Sample size calculation resulted in at least 227 patients to be included. Inclusion criteria are: patients aged over 18 years, in the possession of a smartphone, scheduled to undergo colorectal surgery in either one of the two academic medical centers of Amsterdam (AMC and VUmc). Patients will be randomized to either an intervention- or control group. Patients assigned to the intervention-arm of this study are asked to install the application for smartphone preferably three weeks prior to their scheduled surgery. The patient is encouraged to use the app during the full perioperative period, until six weeks postoperative. Via push-notifications patients are informed and activated to participate in the ERAS care pathway. Patients in the control group will receive standard of care. Both groups will wear an activity tracker to monitor daily activity of the patients.

Results: The enrollment of patients is expected May 2018 and is anticipated to be completed in twelve months. We hypothesize that patients receiving the interventional app, will report a higher Quality of Life as a result of their active involvement in their perioperative care pathway.

Conclusion: Conclusions are to be drawn when data analysis is completed.

Disclosure of Interest: None Declared
Objectives: RALP is considered by many the gold standard surgical treatment for localised prostate cancer. We came from a unit offering enhanced recovery for open radical prostatectomy with discharge after an overnight stay in 80% of cases. We have introduced an enhanced recovery programme for our RALP patients allowing safe discharge as a day case procedure whilst maintaining oncological outcomes.

Methods: Following initial data collection and patient feedback we observed the potential to undertake select cases as day cases. These all adhere to local guidelines for day case selection and RALP surgical suitability. We developed a bespoke multidisciplinary ERAS programme and each patient was assigned a urology nurse specialist key worker as their point of contact. They were pre-assessed and given a detailed patient information booklet on RALP and our ERAS programme.

Results: We have operated on 88 cases with intention of day of surgery discharge. The median age was 62.5, median console time was 89.5 minutes and median blood loss was 112.5mls. 82/88 (93%) patients were successfully discharged on the same day of surgery. Median length of hospital stay was 11 hours. 6/88 patients remained in hospital overnight, 5 were discharged the following morning and the remaining patient suffered a port site bleed requiring blood transfusion and a longer stay. All patients were followed up at day 1 post operatively by telephone consultation and reported their pain as being well controlled, and 100% satisfaction.

Conclusion: Implementing an ERAS programme has allowed RALP to be undertaken as a day case procedure and we believe we are the first to have reported this experience.

We undertook a series of simplifications to our peri-operative process. Specific focus on patient positioning, multimodal analgesia and removal of long acting opiates, with diligent local anaesthetic infiltration to port sites and bladder. This represented a radical shift from our previous standard operating procedure.

Having a motivated and like-minded team was essential, with inclusion of recovery and ward staff in patient planning. Patient education is also vital to success and having in place a robust and continuous method of auditing results key.

We cannot claim non-inferiority as yet, but our results are comparable to non day case RALP.

Disclosure of Interest: None Declared
COMPARATIVE OUTCOMES FOR ROBOTIC WHIPPLE PROCEDURES BEFORE AND AFTER ADHERENCE TO AN ERAS® PROTOCOL.

Michael Passeri¹, William Lyman², Amit Sastry², Allyson Cochran¹, David Iannitti¹, John Martinie¹, Erin Baker¹, Dionisios Vrochides¹
¹HPB Surgery, ²Carolina Medical Center, CHARLOTTE, United States

Objectives: Minimally invasive pancreaticoduodenectomy (PD) is emerging as an alternative to the traditional open technique for selected patients. The robotic platform addresses many technical limitations by offering optical magnification, augmented instrument articulation, and overall greater precision with suture targeting. The aim of this study is to evaluate the postoperative outcomes of robotic PD at our institution since the procedure was introduced in 2012, and how those outcomes have changed after initiation of an ERAS® protocol in 2015.

Methods: Using the Department of HPB Surgery REDCap data repository, we compiled a list of all patients who underwent robotic pancreaticoduodenectomy since we started performing the procedure in 2012. We then dichotomized the resulting 72 patients into pre-ERAS® and post-ERAS® groups. Postoperative outcomes were evaluated for those cases that were completed robotically, with emphasis on operative time, estimated blood loss, margins on malignant specimens, number of nodes excised, positive node ratio, length of stay after operation, and postoperative complication rates.

Results: A total of 72 robotic PDs were attempted; 51 in the pre-ERAS® group, and 21 in the post-ERAS® group. 16 (22%) were converted to open. Of the 56 cases that were completed robotically, 11 were performed for benign disease, while 45 were performed to excise malignant/premalignant lesions. Of those 45, R0 resection was achieved in 34 (75.6%). Median estimated blood loss was 300cc. Median OR time was 419 minutes. Median length of stay was 8 days. Grade B or C pancreatic fistula occurred in 7.2% of cases. The overall operative time, rate of conversion to open procedure, and overall complication rate were lower in the post-ERAS® group, when compared to the pre-ERAS® group.

Conclusion: This study demonstrates that approaching PD with a robotic platform is a viable strategy in the setting of either benign or malignant disease. Conversion rates can be expected to decline as surgeons progress along the learning curve and gain familiarity with the robotic technique, however the overall decrease in post op complications appears to coincide with the initiation of an ERAS® protocol, and may be explained by a tight compliance to that initiative. The complication profile and safety metrics of cases completed robotically are in line with the standards of open PD.

Disclosure of Interest: None Declared
P069
SARCOPENIC OBESITY IN HEPATOPANCREATICOBILIARY MALIGNANCY
Mike Fruscione¹, William Lyman ¹, Michael Passeri¹, Eric Wang², Taylor Stone², Keith Murphy¹, David Iannitti¹, John Martinie¹, Erin Baker¹, Dionisios Vrochides¹
¹Surgery, CAROLINAS MEDICAL CENTER, ²Radiology, Charlotte Radiology, Charlotte, United States

Objectives: Sarcopenia is the progressive loss of skeletal muscle mass and strength. This single-center, retrospective cohort study compares outcomes of patients with sarcopenia and/or obesity who underwent pancreaticoduodenectomy (PD) for pancreatic ductal adenocarcinoma (PDA).

Methods: We analyzed clinical outcomes of 52 patients who underwent a PD for PDA from 2008 to 2013 across four cohorts: sarcopenic; obese; sarcopenic and obese; and neither sarcopenic nor obese. Sarcopenia was quantified using CT imaging to measure total cross sectional skeletal muscle area at the 3rd lumbar area normalized for height. Obesity was defined as body mass index greater than 30.

Results: Of 52 patients, 52% were male, 65% had diabetes and 40% were sarcopenic. Among cohorts, 35% were non-sarcopenic/non-obese, 33% were sarcopenic/non-obese, 7% were sarcopenic/obese, and 25% were non-sarcopenic/obese. A statistically significant difference in pancreatic leak and pancreatic fistula formation was observed (p<0.01 and p<0.05, respectively). Pancreatic leak was observed in 33% of the sarcopenic/obese cohort and 0% in the other sub-groups. Pancreatic fistula was observed in 24% of sarcopenic patients and in only 3% of non-sarcopenic patients, with 50% in sarcopenic/obese and 18% in sarcopenic/non-obese. Delayed gastric emptying occurred in 38% of sarcopenic patients compared to 16% in non-sarcopenic patients. There was no statistically significant difference in mortality and overall survival.

Conclusion: Patients with PDA and sarcopenia who undergo PD are at higher risk of post-operative complications including pancreatic leak, pancreatic fistula formation and delayed gastric emptying. Peri-operative nutritional optimization to treat sarcopenia may improve outcomes following PD.

Disclosure of Interest: None Declared
THE ROLE OF THE INTRAOPERATIVE DOSE OF FENTANYL IN POSTOPERATIVE ILEUS

Mireia Rueda1, Marc Sadurní2, Laia Bosch2, Adela Benitez-Cano2, Carlos Garcia Bernedo2, Lluis Gallart Gallego2
1Anesthesiology, 2Hospital del Mar, BARCELONA, Spain

Objectives: Postoperative ileus (POI) is one of the most common complication after colorectal surgery and its appearance cause a delay in the evolution of enhanced recovery after surgery programs. Although the etiology of POI is multifactorial, perioperative use of opioids represent a major component in its pathophysiology. However, the most appropriate measure and threshold to quantify the association between intraoperative opioid dose and POI remains unknown.

The goal of this study was to evaluate if the dose of intraoperative fentanyl is related to the appearance of POI.

Methods: We carried out a retrospective cohort study of patients undergoing colorectal surgery over three years from 2014 to 2016 at our hospital. Ethics committee approved this study.

We divided patients according to the intraoperative fentanyl dose received into two groups:
- Low dose: <2 µg/Kg/h
- High dose: ≥2 µg/Kg/h

We recorded demographic (gender, age, BMI and ASA status) and intraoperative data that could be related to the POI (type of surgery, laparoscopic or laparotomy approach, fluids received and surgical time).

We reviewed the medical charts to assess the incidence of Postoperative ileum according to surgeon’s criteria in the postoperative period.

Statistical analysis: Chi square to compare the incidence of POI and qualitative demographic and intraoperative data. Student t test to compare quantitative data. P value <0.05% was considered as significant.

Results: We included 423 patients divided between low dose (n=151) and high dose (n= 272).

No differences were found between groups according to demographic or intraoperative data.

The incidence of POI was 30% in low dose group (n=46) and 24% in high dose (n=65). No significant differences were observed.

Conclusion: Although evidence suggests that perioperative use of opioids is related to the appearance of POI, in our study the association of using high doses of intraoperative fentanyl doesn’t seem to affect its incidence. Postoperative opioids could be more responsible of POI.

Disclosure of Interest: None Declared
THE IMPACT OF PATIENT FOCUSED PRE-OPERATIVE EDUCATION ON PATIENT READINESS FOR SURGERY AND LENGTH OF STAY IN COMPLEX ABDOMINAL SURGERY : THE PREOPERATIVE LEARNING AND READINESS IN SURGERY (POLARIS) PROGRAM

Misty B. Eller1, Jessica Drummond1, Kimberly Pate1, Cesar Aviles1, Garth McClune1, Kendra Tezber1, Allyson Cochran1, Dionisios Vrochides1

1HPB Surgery, Carolinas Healthcare System, Charlotte, United States

Objectives: A focused pre operative education program was created specifically for Pancreaticoduodenectomies (PD) due to insufficiencies in knowledge specified by patients. It was created to improve patient knowledge of complex surgical procedures thus providing clear expectations for the hospital course and post operative care. It also reduced the length of hospital stay by aligning the surgery care team expectations with that of patients.

Methods: The Pre operative Learning and Readiness in Surgery (POLaRiS) program is a one-hour, patient-centered, pre operative education class developed for those scheduled to have a Pancreaticoduodenectomy (PD) at a high volume hepatopancreaticobiliary surgery program at Carolinas Medical Center in Charlotte, North Carolina. The face-to-face class is offered twice a week and taught by specially trained, high performing medical staff and providers that are knowledgeable in the surgical procedure, post operative guidelines, and discharge expectations.

Results: Between September 2015 and September 2017 there were 100 PD surgeries performed and evaluated for a study of a formal education class, POLaRiS. Of the 100 patients studied, 79 attended the class. Seventy nine patients completed the class and 85% agreed that all questions were answered prior to surgery. Those that attended the class had a showing of 82% that felt prepared for surgery before coming to the hospital and 77% felt ready for discharge home. The majority of patients agreed that the class was easy to understand with results of 90%. Most patients that attended 93% felt their family was involved, as compared to those that did not attend at 62%. We have also been able to show a decrease in length of stay after surgery in the timeframe of initiating the POLaRiS class at 12.7% and there was no increase in readmission rates during the same timeframe.

Conclusion: Patient focused pre operative education is feasible and can have a valuable impact on the patient experience, their readiness for surgery, as well as financial outcomes in healthcare. By reducing length of hospital stay after surgery and having no increase in readmission rates this can correlate with reduction in overall costs for patients and organizations.

Disclosure of Interest: None Declared
Early discharge does not increase readmission rate in patients robotic assisted radical cystectomy with enhanced recovery protocol

Dimitrios Moschonas¹, Murthy Kusuma¹, Pavlos Pavlakis¹, Chris Jones²,³, Alison Roodhouse¹, Simon Woodhams¹, Michael Swinn¹, Hugh Mostafid¹, Matthew Perry¹, Krishnaji Patil¹

¹Urology, ²SPACeR Group, Surrey Perioperative Anaesthesia and Critical Care Collaborative Research Group, ³Anaesthesia, Royal Surrey County Hospital NHS Foundation Trust, Guildford, United Kingdom

Objectives: We aim to assess if short LoS following robot-assisted radical cystectomy (RARC) with Enhanced Recovery Protocol (ERP) is associated with increased readmission rate and analyse the impact of rehospitalisation in tertiary versus referral hospitals on outcomes.

Methods: Between April 2013 and December 2017, 255 (198 male and 57 female) patients underwent RARC with newly devised multimodal ERP that incorporated all the elements of EAU Robotic Urology Consensus. Analysis of prospectively collected data on LoS and postoperative readmission to demographic and perioperative variables was performed.

Results: The median age at treatment was 71 years old, 76% were males, 72% had a BMI <30kg/m², 81% an ASA score ≤2 and 72% a CPET anaerobic threshold ≥11. The median LOS was 5 days (1st-3rd IQR: 4-7 days). Post-operative day 4 was the most frequent day of discharge from hospital. The incidence of post-operative complications was 42% for minor (Clavien-Dindo grade ≤ II) and 8% for major (grade ≥ III) complications. The occurrence of 30- and 90-day readmission to hospital was 13.9% and 16.5% respectively. Post procedure complications were the only factor significantly associated with readmissions whilst LoS did not significantly correlate with readmissions. 41% of readmissions happened in the tertiary centre and 59% in one of the referral hospitals. 31% of readmissions were infection related (urinary, pelvic collection, lymphocele) and 28% gastrointestinal (ileus, small bowel obstruction). Of the 38 incidents, 12 were considered as potentially avoidable (back pain, scrotal oedema, oral candidiasis).

Conclusion: The results from our centre demonstrate that short length of hospital stay does not affect consistently low readmission rates. This illustrates a favourable patient outcome for a procedure associated with inherent morbidity as a result of minimally invasive approach and multimodal enhanced recovery protocol. The optimisation of the post-discharge regionalised network can further reduce rehospitalisation and minimise the risk of service fragmentation within a tertiary referral facility.

Disclosure of Interest: None Declared
ENHANCED RECOVERY AFTER SURGERY CONCEPT IN SURGICAL TREATMENT OF PATIENTS WITH ACUTE OBSTUCTIVE COLORECTAL CANCER (THE PROSPECTIVE RANDOMIZED CONTROLLED CLINICAL STUDY)
Nikolay A. Sizonenko¹, Dmitry A. Surov¹, Ivan A. Soloviev¹, Andrey E. Demko², Oleg V. Balura¹, Renat A. Akbashev¹
¹Navy Surgery, S. M. Kirov Military Medical Academy, ²Saint-Petersburg I.I. Dzhanelidze research institute of emergency medicine, Saint-Petersburg, Russian Federation

Objectives: To study applicability, safety, and efficiency of the enhanced recovery after surgery (ERAS) concept in the surgical treatment of patients with acute obstructive colorectal cancer.

Methods: Since October 2016, the study participation of 87 patients. Did not include patients with widespread peritonitis, multiple organ dysfunctions and associated complications of a malignant neoplasm. The patients of the enhanced recovery group (the ERAS group, n=44) and control group (n=43) were matched. Pre-operative period (the ERAS group): patient information, prevention of postoperative pain, nausea and vomiting, thromboembolic and infectious complications; intraoperative – decompression of the colon and small (under indications) intestine, the small intestine lavage, embryology oriented surgery and D3-lymphadenectomy, rectus sheath block (epidural analgesia was not used), drainage in the lesser pelvis; postoperative – early mobilization, early removal of the urinary catheter and drainage. Targeted infusion therapy was terminated upon beginning early enteral feeding.

Results: The ERAS group: the postoperative pain syndrome was 4 (3.5; 4.0) (for NRS) in the first day, with regression up to 1 (1.0; 2.0) by the fourth day; no needs in opioid analgesics. 41 patients had no nausea and vomiting; they began to receive enteral feeding in 24-36 h after the surgery; intestinal peristalsis appeared within 12-24 h, gases discharge – in 24-36 h and stool discharge in 48-60 h after the surgery. Eight patients had postoperative complications (Clavien-Dindo I-IIIa – 6, IIIb-IV – 2), five patients died. The post-operative period was 9 (5.5; 12.5) days.

The control group: the pain syndrome was 6 (5.0; 6.0) in the early postoperative period, which required the use of opioid analgesics. 27 patients had nausea and vomiting after the surgery, events of postoperative intestinal paralysis were eliminated by the 4-5th day. Thirteen cases of postoperative complications were recorded (Clavien-Dindo I-IIIa – 8, IIIb-V – 5). Four patients underwent relaparotomy. Eleven patients died. The post-operative period was 12 (9.5; 18.0) days.

Conclusion: Application of the ERAS concept is safe and effective due to improving the immediate results of surgical treatment of patients with acute obstructive colorectal cancer.

Disclosure of Interest: None Declared
A ROLE FOR HOSPITAL MEDICINE IN PERIOPERATIVE CARE
Rachel E. Thompson¹, David Seeley², Jason Shiffermiller¹
¹Internal Medicine, UNIVERSITY OF NEBRASKA MEDICAL CENTER, ²Acute Care Programs, Nebraska Medicine, Omaha, United States

Objectives: In the United States nearly one-quarter of the 36 million annual hospital admissions are surgical. Surgical admissions are twice as costly and on average have a longer length of stay compared to medical hospitalizations. Eighty percent of hospitalists in the United States report being involved in perioperative care. The objective of this work was to compare outcomes between patients cared for in a collaborative model with patients who did not receive hospitalist care.

Methods: At the University of Nebraska, hospitalists provide perioperative care to patients undergoing orthopaedic and neurosurgical procedures. Patients are identified as high risk by the surgical providers and referred for Hospital Medicine (HM) evaluation. Many patients are seen preoperatively in conjunction with Anesthesia to risk stratify and plan for the care of complex medical conditions leading up to and after surgery, through the time of discharge. Patients discharged between January 1, 2016 and December 31, 2017 were included in the analysis. Data was abstracted from a clinical administrative database.

Results: 522 patients were cared for in the collaborative model including HM; 3374 patients did not have a hospitalist involved in care. The case mix index, average length of stay and direct costs were higher for those with HM. However, the observed to expected mortality ratio was significantly less in both the orthopaedic and neurosurgical groups (Table). Moreover, when comparing patients with a longer length of stay—such that patient acuity was more similar between the groups—the HM collaborative model continued to demonstrate lower mortality ratios (Orthopaedic Surgery 0.38 v 0.57; Neurosurgery 0.25 v 0.82).

Table. Observed and Expected Mortality.

<table>
<thead>
<tr>
<th></th>
<th>Orthopaedic Surgery</th>
<th>Neurosurgery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collaborative Model</td>
<td>No Hospital Medicine</td>
</tr>
<tr>
<td>Observed</td>
<td>0.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Expected</td>
<td>2.3%</td>
<td>0.5%</td>
</tr>
<tr>
<td>O:E Ratio</td>
<td>0.38</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Conclusion: The collaborative care model for patients with complex medical conditions that includes an engaged HM team was associated with lower observed to expected mortality. This has been reported by at least one other institution previously (abstract presented at the Perioperative Medicine Summit, 2012). There is clear selection bias with indicators that patients in the HM were of a higher acuity. However, adjusting for this acuity in the observed to expected ratio, patients in the collaborative care model fared better.

Disclosure of Interest: None Declared
EARLY VERSUS TRADITIONAL ORAL FEEDING AFTER ABDOMINAL SURGERY: A META-ANALYSIS OF RANDOMIZED CLINICAL TRIALS

Razieh Khalooeifard1, Banafshe Hosseini2, Sakineh Shab-Bidar3, Kourosh Djafarian4
1School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences (TUMS), Tehran, Iran, Islamic Republic Of, 2School of Biomedical Sciences and Pharmacy, Faculty of Health and Medicine, University of Newcastle, Newcastle, Australia, 3Department of Cellular and Molecular Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, 4School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences (TUMS), Tehran, Iran, Islamic Republic Of

Objectives: Early versus traditional oral feeding after abdominal surgery: a meta-analysis of randomized clinical trials

Summary
Background & aims: Effect of early oral feeding (EOF) on the length of hospital stay (LOHS) and time to start regular diet (TSRD) after abdominal surgery is unknown. The aim of this meta-analysis was to evaluate LOHS and TSRD following EOF compared with the traditional oral feeding (TOF) in patients with any type of emergency or elective abdominal surgery and any type of anesthesia.

Methods: PubMed and Scopus were searched to identify randomized clinical trials assessing the LOHS and TSRD following EOF (≤24 hours after surgery) versus TOF (after return of bowel sounds/movement or traditional hospital time) in patients with any type of emergency or elective abdominal surgery and any type of anesthesia, with language restricted to English and published up to 25th of October 2017. Data analysis was assessed using STATA software.

Results: Nine trials involving a total of 1490 patients were included. The pooled results showed that EOF reduced LOHS (weighted mean difference -1.43 days: 95% CI -2.13 to -0.73; p<0.0001) and TSRD (weighted mean difference -6.35 hour:95% CI -10.79 to -1.90 ; p<0.0001) compared with TOF.

Conclusion: This meta-analysis provides evidence that EOF after any type of emergency or elective abdominal surgery with type of anesthesia reduced the LOHS and TSRD.

Disclosure of Interest: None Declared
EFFECTS OF EARLY BETA-BLOCKADE ON MORBIDITY AND MORTALITY OUTCOMES AFTER ELECTIVE COLON CANCER SURGERY

Rebecka Ahl¹,², Peter Matthiessen²,³, Xin Fang⁴, Yang Cao²,⁴, Göran Wallin², Gabriel Sjölin²,³, Olle Ljungqvist⁵,⁶, Shahin Mohseni²,³

¹Department of Surgery, Karolinska University Hospital, Stockholm, ²School of Medical Sciences, Örebro University, ³Department of Surgery, Örebro University Hospital, Örebro, ⁴Institute of Environmental Medicine, ⁵Department of Molecular Medicine and Surgery, Karolinska Institutet, Stockholm, ⁶School of Health and Medical Sciences, Örebro University, Örebro, Sweden

Objectives: Colon cancer surgery is associated with substantial post-operative morbidity and mortality, despite better overall care and advances in surgical techniques. It has been elucidated that the trauma of surgery triggers adrenergic hyper-activation, which is believed to drive various stress responses and plays a leading role in causing these adverse outcomes. Our hypothesis was that associated morbidity and mortality benefits are to be gained, by reducing the effect of the hyperadrenergic state with beta-blocker exposure, in patients subjected to elective colon cancer surgery.

Methods: This retrospective cohort study identified adult patients undergoing elective surgery for colon cancer from the Swedish National Quality Registry for Colorectal Cancer Treatment over an eight-year period. Demographics and clinical outcome information were obtained from the registry. Patients were linked to the national electronic drugs registry to collect information about pre-operative beta-blocker therapy. Patients were subsequently subdivided into beta-blocker negative and positive groups. Poisson regression analysis was used to evaluate risk factors for 30-day all-cause and cause-specific mortality as well as post-operative complications.

Results: A total of 22,805 patients were included in this study. Thirty-four percent of patients were prescribed daily beta-blocker therapy prior to surgery. The risk of 30-day mortality of patients exposed to regular pre-operative beta-blockers was reduced by 91% relative to the mortality rate of those who were not (multivariate adjusted incidence rate ratio=0.09, 95% confidence interval: 0.06 – 0.13, p <0.001). Similar effects were observed in cause-specific deaths originating from cardiovascular, respiratory, sepsis and multi-organ failure. In the beta-blocker positive group, the risk of post-operative complications fell in six of nine categories. Reductions associated with individual causes ranged between 28% (p<0.001) to 66% (p=0.02).

Conclusion: Beta-blocker therapy is associated with a statistically significant reduction in 30-day all-cause mortality as well as cause-specific deaths originating from any of cardiac, respiratory, sepsis and multi-organ failure following elective surgery for colon cancer. Its use may be considered as a way of improving outcomes for this patient group.

Disclosure of Interest: None Declared
A NOVEL NON-OPIOID PREEMPTIVE PAIN PROTOCOL

Rick Bushnell

Anesthesia, Shriners Hospitals for Children, Pasadena, United States

Objectives: The American Academy of Pediatrics notes that “Legitimate opioid use before high school graduation is independently associated with a 33% increase in the risk of future opioid misuse after high school.” Our Novel Non-Opioid PreEmptive Pain Management Protocol offers a management pradygm designed to limit the exposure of patients to post-surgical opioids.

Methods: Multi-modal per os (PO) non-narcotic pain management has been advocated by multiple pain management specialty medical societies. An extensive review of the literature, though, reveals no advocate of prescribing those medications based on the realities of 1st-order elimination pharmacokinetics; that it takes 5 half-lives for those medications to reach maximum sustained blood levels (right). All patients were assessed by an anesthesiologist in ambulatory preop clinic 3-10 days before surgery. They were prescribed weight-based combinations of acetaminophen, celecoxib and gabapentin. We instructed patients to begin taking these medications starting 48 hours before surgery, to continue the morning of surgery upon waking, to resume dosing immediately post-op and to continue for 3-5 days after surgery.

Results: The patient-reported pain and opioid usage patterns (PROMs) of a series of 300 pediatric plastic and orthopedic cases were analyzed. Dosages issued by the physician and used by the patient were then reconciled. In this initial series, 1,171 doses of oxycodone were prescribed, 213 doses were used by patients, 958 doses remained unused. The result is that 81.81% of opioids remain unused at the end of the treatment. It is significant to note that these opioid prescriptions were consistent with 3 day CDC guidelines.

Conclusion: This initial observational trial of the utilization of three PO non-narcotic medications of widely varying mechanisms according to the foundational principals of classic pharmacokinetics appears to result in a substantial opioid-sparing effect. Randomized, double blinded trials are the next step to quantify the difference between standard and preemptive protocols.


Disclosure of Interest: None Declared
Objectives: Objectives: Compare the length of post-operative hospital stay and the incidence of postoperative complications between patients in the ERAS group and in the conventional care group.

Methods: Methods: 33 participants above 18 years of age, undergoing laparotomy, were randomly assigned to an intervention (ERAS) arm or to a control (standard surgical care) arm at Mbarara Regional Referral Hospital in Uganda. The ERAS and the control arm had 16 and 17 patients respectively, followed-up 14 days after surgery.

Results: Results: patients in the ERAS arm had 2.4 days (SD 0.7) of post-operative hospital stay shorter than those in the control arm, \( p=0.0025 \) (4.1±0.2 vs 6.5±0.6). 18.8% of patients in the control arm developed post-operative complications compared to 5.9% in the ERAS arm (Statistical insignificance, \( p=0.335 \)). ERAS patients passed flatus eight hours earlier than patients in the control arm, and mobilisation out of bed happened 12 hours earlier in the ERAS group.

Conclusion: Conclusion: ERAS is feasible at Mbarara Regional Referral Hospital, and it leads to reduced hospital stay duration and post-operative complications in laparotomy cases.

Disclosure of Interest: None Declared
Objectives: The Enhanced Recovery After Surgery (ERAS) Programme is an approach to perioperative management of patients shown to lower complication rates and length of stay (LOS). Tan Tock Seng Hospital (TTSH) has been a member of the ERAS Society since March 2016 - one of the first two centres in Asia to implement the ERAS Programme. We review the clinical and financial impact of ERAS on patient outcomes after elective major colorectal surgery in our institution.

Methods: Data collected in the ERAS Interactive Audit System for patients undergoing elective colorectal surgery from March 2016 to March 2017 was analyzed retrospectively. This was compared with data collected from January 2015 to December 2015 during the traditional care period. The primary outcome was postoperative length of stay (LOS). Secondary outcome measures were postoperative complications, readmission rates and cost savings. Further subgroup analysis was performed for patients with postoperative complications in both groups for LOS and cost savings.

Results: 131 patients in the ERAS group were compared to 164 patients in the traditional care group. There were no significant difference in patient demographics between the groups.

Patients in the ERAS group had a significantly shorter median LOS compared to the traditional care group (5 vs 7 days, p<0.01). There was no difference in overall complication rates between both groups (p= 0.48). Patients in the ERAS group had a significantly lower readmission rate compared to the traditional care group (4.6% vs 11%, p<0.01). Cost analysis showed a reduction in cost of $1070 per patient in the ERAS group.

Subgroup analysis of patients with postoperative complications showed that those receiving traditional care stayed longer (Median LOS 11 vs 8 days, p<0.01). Cost savings in patients with postoperative complications was $3951 per patient in the ERAS group compared to those in the traditional care group.

Conclusion: Implementation of ERAS Programme is associated with significantly shorter postoperative LOS and readmission rates. There was no significant difference in postoperative complications. Cost savings was also shown to be significant with ERAS care - this has significant savings for the healthcare system, especially in an environment of escalating healthcare costs.

Disclosure of Interest: None Declared
ERAS BENEFIT NOT ONLY FOR PATIENTS, BUT ALSO FOR MEDICAL STAFFS FROM ENHANCING THE POSITIVE WORK ENVIRONMENT
- ERAS IMPLEMENTATION EXPERIENCE IN ONE MEDICAL CENTER FROM TAIWAN
Shu Lin Guo1, 2, Wei-Hsiu Huang1, Po-Heng Chen1, Szu Yun Hsiao1, Juei Chii Wong1, Tsorng Shyang Yang1
1Department of Anesthesiology, Cathay General Hospital, 2Department of Anesthesiology, Tri-Service General Hospital and National Defense Medical Center, Taipei, Taiwan, Province of China

Objectives: It has been known that enhanced recovery after surgery (ERAS) protocols lead to a reduction in complications and high patients' satisfactions. However, Taiwan's high utilization of health care services under National Health Insurance (NHI) have been one of major reasons for high workload and prevalence of burnout though public satisfaction with the NHI has been high, averaging in the 80 percent range. Initially, we worried whether the exhausted status and extra burden will be one potential barriers of implementation of ERAS. The aim of this study is to compare the consequential change of work environment among medical staffs involved in direct patient care before and after ERAS.

Methods: We use a modified 27-questionnaire to measure workplace spirituality. Our team members in ERAS protocol are asked to finish the questionnaire before and after carrying out ERAS protocol respectively. The primary outcome is the satisfaction scales difference between two tests. Subgroup analysis is also researched and discussed.

Results: Thirty-seven medical staffs were included in this study and asked to complete the questionnaire twice, in 2017/01 and 2017/08 separately. As the result, fourteen in twenty-seven questions reveal statistically significant (p<0.05). Two questions are about "community" dimension. Five are about "inner life" dimension. The other seven questions are about "meaningful work" dimension. Subgroup analysis was not performed due to the small size of this study.

Conclusion: By measuring our ERAS team members' workplace spirituality, we conclude that adoption of ERAS protocol has positive influence not only on patients, but also on medical staffs. Among all the factors of workplace spirituality, "meaningful work" improves the most. That is, medical staffs increase their own satisfaction because they can do good job, gain team members' supports and get a real feedback from patients' recovery. Further studies are needed to validate the observation in either larger size of populations or each subgroup.

Disclosure of Interest: None Declared
P083
IMPROVING THE DELIVERY OF PRE-OPERATIVE EDUCATION FOR PATIENTS ON THE COLORECTAL ERAS PROGRAMME
Susan Montgomery*1, 2, Barbara O'Donnell1, Caroline Sime1
1School of Health, Nursing and Midwifery, University of the West of Scotland, Paisley, 2Queen Elizabeth University Hospital, NHS SCOTLAND, Glasgow, United Kingdom

Objectives: Enhanced recovery after surgery (ERAS) programmes adopt a standardised evidence based approach to treating patients undergoing colorectal surgery [1]. The ERAS approach aims to reduce post-operative complications, hasten recovery times and improve patient outcomes [2]. Patient education and engagement with the programme is therefore essential from the outset. The main element of the existing education programme comprised of an educational DVD depicting the patients journey. Written and verbal information was also provided. It was identified that very few patients were watching the DVD. A quality improvement project was devised, the aim being to increase the number of patients watching the DVD and to improve the delivery of pre-operative information given to patients.

Methods: Using the Model for Improvement a project charter was created setting out clear project aims and goals. Change ideas and project constraints were considered and identified using current evidence, knowledge of local working practices and information was gathered from a pre-project survey. Project measures were identified to demonstrate how we would know that any changes made were an improvement. A series of change ideas were tested, evaluated and implemented using iterative Plan, Do, Study, Act (PDSA) cycles.

Results: The project findings showed a steady improvement in the number of patients attending educational drop-in sessions and watching the DVD. Feedback from patients reflected a positive experience and suggested that they felt well prepared for surgery. Other findings demonstrated the benefits of the interactive drop-in sessions as providing an opportunity for patients to access additional help and advice that they might not otherwise have had.

Conclusion: The principles of person-centred care are inherent within the ERAS programme and require added focus and exploitation to manage patient expectations, achieve better outcomes and improve patient experience.


Disclosure of Interest: None Declared
THE ROLE OF STOMA NURSE IN PREOPERATIVE EDUCATION: AN ANALYSIS ON THE RECOVERY TIME OF THE AUTONOMY OF THE PERSON WITH OSTOMY.
Susana I. R. Barreira* ¹
¹Nurse, Hospital Beatriz Ângelo, Lisboa, Portugal

Objectives: Preoperative education is a keystone of the ERAS® program. In the particular case of patients undergoing colorectal surgery it is of great importance study the importance of preoperative education for stomatherapy. Therefore, this study aims to analyse the impact of preoperative education in the recovery time of the autonomy of the person with ostomy after colorectal surgery.

Methods: Retrospective analysis two groups of patients, both submitted to colorectal surgery with ostomy construction, between January 2016 and December 2017. The first group (15 patients) was not included in the ERAS® program and did not receive preoperative education. The second group (23 patients) under the ERAS® program received a preadmission education session with ostomy site marking. But also an enlightenment session with reinforcement of the presurgery teaching with the ERAS® stomatherapist nurse. The study data were taken from the ERAS® Interactive Audit System.

Results: Both the conventional (without preoperative education) group and the ERAS group (with preoperative education) were mostly men (G1 = 67%, G2 = 65%), with a mean age of 63 years (G1) and 68 years (G2) and both mainly with ileostomy. Patients in the conventional group who did not receive preoperative education became autonomous in ostomy care at the 18th day post-surgery, with a standard deviation of 27 days. ERAS® patients who received preoperative education became autonomous within 7 days post surgery, with a standard deviation of 3 days. It is also possible to observe that in the conventional group, as in the ERAS group, the moment of independence coincides with the time of discharge. However in the conventional group there is a greater percentage of patients becoming independent 3 to 5 days before discharge.

Conclusion: The study reveals that in a group of similar patients, preoperative education was a decisive factor for a much faster recovery of the physical and instrumental autonomy of the ostomy care compared to the unprepared group. The ERAS® patient group in addition to the involvement and educational preparation with stomatherapist ERAS nurse, also benefited from a preoperative optimization and multidisciplinary postoperative recovery plan. It should also be noted that in this study, the psychological, social and spiritual impact of ostomy construction and consequent adaptation to it in these areas of life were not evaluated.

Disclosure of Interest: None Declared
WHAT ROLE COULD FURTHER IMPLEMENTATION OF ERAS ACROSS ELECTIVE ORTHOPAEDIC AND SPINAL PROCEDURES PLAY IN HELPING TO EASE THE CURRENT NHS CAPACITY CHALLENGES?

Thomas W. Wainwright*, Louise Burgess

1Orthopaedic Research Institute, Bournemouth University, 89 Holdenhurst Road, United Kingdom

Objectives: The National Health Service (NHS) in England is currently under severe capacity and economic pressures. Within acute NHS hospitals, the demand for beds from emergency admissions is resulting in increased waiting times and cancellations of non-urgent surgical operations, such as orthopaedic and spinal procedures. Enhanced Recovery after Surgery (ERAS) has been proven to reduce length of stay across a range of orthopaedic procedures. This analysis aimed to assess the extent to which the further implementation of ERAS could affect bed capacity on a national scale.

Methods: Data on average length of stay (LOS) for elective (non-trauma) orthopaedic and spinal procedures were analysed from 131 English NHS trusts over the last available 12 months (October 2016-September 2017) using hospital episode statistics (HES) sourced from Dr Foster. Procedures were organised through Office of Population Censuses and Surveys (OPCS) classification of intervention and procedures codes (OPCS-4).

A Pareto analysis was undertaken to understand which procedures have the greatest impact on LOS and demand for hospital beds. This was further analysed by removing day case surgeries and then stratifying LOS by number of days stay.

Results: 598,823 surgical procedures were analysed. 376,690 procedures were removed due to being day cases and then the following 97,884 stayed 1-2 days, 68,655 stayed 3-4 days and 55,594 stayed longer than 5 days. Of the 55,594 procedures who stayed more than 5 days, 80% of these cases were total hip replacement (THR), total knee replacement (TKR), total shoulder replacement (TSR), total ankle replacement (TAR), revision total hip replacement (REV THR), revision total knee replacement (REV TKR) and lumbar spinal procedures. A conservative estimate of reducing all procedures over 3 days by one day would result in 124,249 days bed saving per year across the NHS, or 948 bed days per hospital.

Conclusion: The procedures that make up 80% of all elective orthopaedic and spinal surgeries where patients stay in hospital for longer than three days should be a priority for future ERAS implementation. Application of ERAS principles to these procedures is feasible and safe. Reducing LOS in these procedures may have a considerable benefit to the capacity and financial problems that the NHS is currently facing.

Disclosure of Interest: None Declared
IS ERAS NOW THE ROUTINE STANDARD CARE IN ENGLISH NHS HOSPITALS FOR TOTAL HIP REPLACEMENT AND TOTAL KNEE REPLACEMENT?

Thomas W. Wainwright, Louise Burgess

Orthopaedic Research Institute, Bournemouth University, 89 Holdenhurst Road, United Kingdom

Objectives: For total hip replacement (THR) and total knee replacement (TKR), Enhanced Recovery after Surgery (ERAS) pathways have reduced length of stay (LOS) to 1-3 days for unselected patients and outpatient surgery is possible. Although the evidence base supports routine 1-3 day discharge, we hypothesise that this is not a reality for most National Health Service (NHS) patients. The NHS has considerable economic and capacity challenges. Reducing LOS for high volume procedures in line with published best practice could provide highly significant efficiency benefits. We aimed to assess if ERAS is now the routine standard care in English NHS hospitals for THR and TKR by using LOS as a proxy indicator.

Methods: Data on average LOS following THR and TKR were analysed from 131 English NHS trusts from Oct 2016-Sept 2017 using hospital episode statistics sourced via Dr Foster. The relative risk (RR) of a long LOS was calculated, which considers contributing exposure factors to staying longer than expected in hospital.

Results:
52,271 THR and 62,666 TKR superspells were analysed. Mean national LOS for the 12 months analysed was 4.81 for THR and 4.77 for TKR. There was wide variation in the RR of patients having a long LOS across providers. The mean national RR of a long LOS for THR was 115.31 (range 44.74-273.45), which is significantly higher than the benchmark of 100. 17 trusts have a significantly lower number of long stay patients compared to 50 trusts with a higher number of long stay patients than expected.

The mean national RR of a long LOS for TKR was 120.38 (range 46.11–258.04), which is significantly higher than the benchmark of 100. 15 trusts have a significantly lower number of long stay patients compared to 55 trusts with a higher number of long stay patients than expected.

Conclusion: Mean LOS for both THR and TKR is appreciably greater in NHS hospitals than reported in the ERAS literature. There is a wide variation in the case-mix adjusted RR of a long LOS across trusts. This demonstrates that exemplar sites exist and are achieving outcomes in line with ERAS literature; however this is not a reality across the majority of trusts. As the data is case-mix adjusted and there is a wealth of evidence and clinical expertise in ERAS, it is likely that either external catalysts or a more strategic national implementation of best-practice is required for quality improvement to occur.

Disclosure of Interest: None Declared
WHAT IS THE CURRENT EVIDENCE BASE FOR POST-OPERATIVE PHYSIOTHERAPY IN GENERAL SURGICAL ERAS PATHWAYS?

Thomas Wainwright 1, Louise Burgess 1
1 Orthopaedic Research Institute, Bournemouth University, 89 Holdenhurst Road, United Kingdom

Objectives: Enhanced Recovery after Surgery (ERAS) has improved outcomes following elective surgery. Physiotherapy has traditionally played an important role in the surgical pathway, and a major advance in ERAS has been the introduction of early mobilisation. However, changes in other post-operative physiotherapy interventions have been less apparent. This systematic review aimed to assess the current evidence for post-operative physiotherapy interventions deployed in general surgical pathways that reported adherence to ERAS principles.

Methods: A systematic review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist. A computer-based search was completed in September 2017, and the electronic databases sourced included: PubMed, Cochrane Library, CINAHL Complete and Medline Complete. Randomised controlled trials (RCTs) that compared physiotherapy interventions for patients following general, elective ERAS procedures were included. Orthopaedic surgeries were not included within the search due to the nature of procedure and already published literature in this area.

Results: One study was found to compare post-operative physiotherapy interventions in a cohort of radical cystectomy patients on an ERAS pathway. The authors found fast-track surgery with the addition of a progressive exercise based intervention to improve patient outcomes with no increase to severity of complications.

Conclusion: It is essential that the paucity of research to assess post-operative physiotherapy interventions within ERAS cohorts following general, elective surgery is highlighted and exposed. Physiotherapy is a central tenet of the rehabilitation journey. It is possible that evidence-based post-operative physiotherapy interventions are being used in ERAS cohorts; however, this practice is not reported within the literature. Without well-conducted RCTs to evaluate procedure-specific physiotherapy interventions, the optimal type, timing, and dose will not be found, and the potential for improving patient functional recovery will likely be limited.

Disclosure of Interest: None Declared
APPLICATION OF DIGITAL LEARNING PLATFORMS WITHIN ERAS; A SYSTEMATIC REVIEW

Thomas Walker* ¹, Fernando Y. Chang¹, Fiona Carter¹, Nathan Curtis¹,², Godwin Dennison¹, Nader Francis¹,³ on behalf of ERAS UK

¹General Surgery, Yeovil District Hospital, Yeovil, ²Surgery and Cancer, Imperial College London, London, ³Faculty of Science, University of Bath, Bath, United Kingdom

Objectives: Digital learning platforms are becoming more commonplace as an adjunct for the education of healthcare professionals and patients. The current uptake of digital learning platforms within perioperative care and Enhanced Recovery After Surgery (ERAS) programme is not known. Therefore, we aimed to report the availability, uptake and efficacy of digital learning platforms in perioperative care and ERAS care.

Methods: A systematic search of the Pubmed, Embase and Cochrane databases was conducted in keeping with the PRISMA principles. Inclusion criteria were articles published between 2000 and 2017 reporting on the nature and use of digital ERAS educational platforms. The search strategy captured terms for perioperative care, ERAS, computer assisted instruction and e-learning. Articles were independently screened by two authors using a dedicated data extraction form.

Results: Twenty six studies were included from 10 surgical specialities. The majority were not used within dedicated ERAS programmes. Digital platforms included e-learning (31%), website based learning (27%), online clinical pathways (with an educational theme) (12%), online virtual patients (12%), mobile/tablet learning programs (15%) and interactive DVDs (4%). Targeted learners include patients (65%), surgical multidisciplinary teams (8%), surgical residents (8%), perioperative staff (8%) and medical and nursing students (8%). Three reported digital learning interventions incorporated entire perioperative clinical pathways with one study investigated the effect within an established ERAS programme. Few studies investigated the impact of their tool. Outcomes measures included knowledge recall (23%), post-operative pain (12%), anxiety (12%), length of stay (8%) and usability (8%). Where reported ERAS protocol deviation, length of stay and patient satisfaction were improved with digital learning interventions.

Conclusion: A number of digital learning platforms are currently used within perioperative care with very few dedicated digital ERAS tools. There is an opportunity to design bespoke ERAS learning interventions addressing multi-disciplinary needs and encompassing the whole ERAS pathway.

Disclosure of Interest: None Declared
P089
ENHANCED RECOVERY AFTER LIVER SURGERY: A COMPARATIVE STUDY OF A SOUTHERN BRAZILIAN CENTER
Uirá F. Teixeira¹, Florentino F. Mendes², Luciano Vitola³, Carlos Farias², Daieni Fernandes³, Cristiane Nazareth³, Ingrid Ewald³, Bruna Leão³, Paulo Roberto O. Fontes¹
¹Gastrointestinal Surgery, ²Anesthesiology, ³Federal University of Health Sciences of Porto Alegre / Santa Casa Hospital of Porto Alegre, Porto Alegre, Brazil

Objectives: After the publication of the first recommendations of ERAS Society regarding colonic surgery, the proposal of surgical stress reduction, maintenance of physiological functions and optimized recovery was expanded to other surgical specialties, with minimal variations. On August 2016, the official protocol of ERAS Society for Liver Surgery was published. Since then, many institutions all over the world have shown favorable outcomes after the implementation of these guidelines. This work represents the first Brazilian experience regarding hepatic surgery.

Methods: 50 patients that underwent elective hepatic surgery at Santa Casa Hospital were retrospectively evaluated, using medical records data, from June 2014 to July 2016. After September 2016, 35 patients were prospectively evaluated and managed in accordance with ERAS protocol. Groups were compared using Mann-Whitney and Student’s t-test (for normal distribution), and statistical analysis was performed through the chi-square test of homogeneity with a level of significance of 5%.

Results: There was no difference in age, type of hepatectomy, laparoscopic surgery and postoperative complications between the groups. In ERAS group, it was observed a reduction in preoperative fasting and in the length of hospital stay by 2 days (p< 0.001). Carbohydrate loading, j-shaped incision, early oral feeding, postoperative prevention of nausea and vomiting and early mobilisation were also significantly related to ERAS group. Oral bowel preparation, pre-anesthetic medication, subcostal incision, prophylactic nasogastric intubation and abdominal drainage were more common in control group.

Conclusion: Implementation of ERAS protocol is feasible and beneficial for health institutions and patients, without increasing morbidity and mortality.


Disclosure of Interest: None Declared
P090
IMPLEMENTATION OF ENHANCED RECOVERY AFTER COLORECTAL SURGERY PROTOCOL: INITIAL RESULTS OF THE FIRST BRAZILIAN EXPERIENCE
Uirá F. Teixeira 1, Florentino F. Mendes 2, Luciano Vitola 3, Carlos Farias 4, Cristiane Nazareth 3, Daini Fernandes 5, Bruna Leão 6, Ingrid Ewald 3, Paulo R. Fontes 1
1Gastrointestinal Surgery, 2Anesthesiology, Federal University of Health Sciences of Porto Alegre / Santa Casa Hospital of Porto Alegre, 3Santa Casa Hospital of Porto Alegre, Porto Alegre, Brazil, 4Anesthesiology, 5Nutrition, 6Physiotherapy, Santa Casa Hospital of Porto Alegre, Porto Alegre, Brazil

Objectives: Guidelines for enhanced recovery after surgery have their bases in colonic surgery, through the first protocols published in 2012. Since then, this practice has spread throughout the world, mainly due to improvements in surgical outcomes associated with resource savings. This work aims to analyze the first prospective results after the implementation of the guidelines in a tertiary Institution in Brazil: the first Brazilian experience with ERAS.

Methods: 48 patients that underwent elective colorectal surgery at UFCSPA/ISCMPA were retrospectively evaluated, using medical records data, from January to June 2016. From September 2016 to March 2017, 35 patients were prospectively evaluated and managed in accordance with ERAS protocol. Groups were compared using Mann-Whitney test, and statistical analysis was performed through the chi-square test of homogeneity with a level of significance of 5%.

Results: With a 68.6% compliance rate, length of hospital stay (p=0.002), use of abdominal drains (p<0.001) and mechanical bowel preparation (p<0.001) were reduced. Mortality rates, anastomotic fistula, abdominal abscesses and reoperations were also reduced in ERAS group, but without statistical significance.

Conclusion: Enhanced recovery after surgery protocols benefit patients care, resulting in better outcomes and possibly resource savings. Even with some limitations, its implementation is feasible in Public Health Systems.


Disclosure of Interest: None Declared
A PROTOCOL FOR HIP AND KNEE REPLACEMENT ACCORDING TO THE PRINCIPLES OF THE ERAS SOCIETY

Ulrich Betz\textsuperscript{1}, Markus Goldhofer\textsuperscript{2}, Thomas Klonschinski\textsuperscript{2}, Jan Spielberger\textsuperscript{3}, Laura Langanki\textsuperscript{1}, Birgit Mehli\textsuperscript{2}, Jürgen Konradi\textsuperscript{1}, Claudia Wolf\textsuperscript{1}, Philipp Drees\textsuperscript{2}

\textsuperscript{1}Institute of Physical Therapy, Prevention and Rehabilitation, \textsuperscript{2}Department of Orthopaedics and Traumatology, \textsuperscript{3}Department of Anaesthesiology, UNIVERSITY MEDICAL CENTER OF THE JOHANNES GUTENBERG UNIVERSITY MAINZ, Mainz, Germany

Objectives: The implementation of Enhanced Recovery after Surgery (ERAS) protocols has tremendously improved the patient’s postoperative outcome, which also reduced the length of the hospital stay (LOS), postoperative complications, and costs. ERAS guidelines are available for various major visceral surgeries, but so far there is no ERAS protocol for hip and knee replacements. However, we have transferred the principles of Enhanced Recovery to our perioperative treatment of patients with hip and knee replacements and present the 2-year experiences.

Methods: A treatment protocol for patients with hip and knee replacement, according to the principles of the ERAS Society, was implemented. The multidisciplinary team approach focused on early postoperative mobilization and motivating the patient to become active. Characterizing elements were: a preoperative patient information event, a coach system, maximum soft tissue-sparing surgical techniques with infiltrative medication to control bleeding and swelling, high security against dislocation, the avoidance of drains, pain and bladder catheters, multimodal oral pain therapy, no movement restrictions, leaving the bed on the day of surgery, activating care, activity-directed physiotherapy, motivating for self-reliant training and functional discharge criteria from hospital.

Results: Between 2016 and 2017, 805 patients underwent a joint replacement (311 hip replacements (HR) and 494 knee replacements (KR)) and were treated according to this protocol. The patient satisfaction was excellent (1.4), evaluated on a 5-point Likert scale. With 111/132 points in the PPP-33 questionnaire, patients gave us a very positive feedback. Compared to patients treated before, the LOS was reduced by 7.02 days (48 \%) for HR and by 5.92 days (44 \%) for KR. Adverse events like fracture, infection, pneumonia, cardiovascular complication, nerve injury, pulmonary embolism, deep leg vein thrombosis and other were 5.8 \% in HR and 3.2\% in KR.

Conclusion: The transfer of the principles of Enhanced Recovery to hip and knee replacements is possible and improves most-likely the patient’s outcome. Our results encouraged us to extend the program and conduct PROMISE, a prospective multicenter project, to evaluate our improvements. PROMISE evaluates 5000 patients from 3 hospitals over 3 years and is supported financially by the Innovationsfond of the Federal Joint Committee (G-BA) with € 5.1 million.

Disclosure of Interest: None Declared
MOSAPRIDE REDUCES THE INCIDENCE OF PROLONGED POSTOPERATIVE ILEUS AFTER OPEN COLORECTAL SURGERY
Varut Lohsiriwat 1
1Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Objectives: Postoperative ileus (POI) is a physiologic hypomotility of GI tract after abdominal surgery. Prolonged POI refers to this gastrointestinal dysfunction continuing past the expected timeframe – usually beyond 4 or 5 days after open colorectal surgery. Treatment options for prolonged POI are limited; therefore, it is essential to focus on preventive strategies. Mosapride, a prokinetic agent acting as a selective 5-hydroxytryptamine-4 agonist, has been shown to reduce prolonged POI in laparoscopic and hand-assisted laparoscopic colorectal surgery. This study aimed to determine the effects of mosapride on postoperative recovery of GI function, especially prolonged POI using a systematic review and global survey criteria of POI in 2013, in patients undergoing ‘open’ colorectal surgery.

Methods: This was a review of prospectively collected database of patients undergoing elective ‘open’ colorectal resection under an enhanced recovery after surgery pathway from 2013 to 2017. The last 84 patients receiving postoperative mosapride were compared to those 168 patients without such a drug (historical comparison with a ratio of 1:2). Postoperative outcomes were determined.

Results: Patient characteristics were comparable except the control group had more incidences of DM and more complex operation. Overall complication, global resumption of intestinal transit and length of hospitalization were not significantly different between the two groups. However, the control group had more incidence of prolonged POI and prolonged POI requiring NG tube insertion (17.3% vs 7.1%; p=0.029 and 8.9% vs 3.6%; p=0.19), respectively. A multivariate analysis of factors potentially associated with or protective of POI showed that postoperative administration of mosapride is only a protective factor for prolonged POI (OR=0.37, 95% CI=0.15-0.93, p=0.034).

Conclusion: This study shows that postoperative administration of mosapride reduced the incidence of prolonged POI after open colorectal surgery.

Disclosure of Interest: None Declared
THE IMPLEMENTATION OF AN ERAS PROGRAM IN PATIENTS UNDERGOING EMERGENCY COLORECTAL SURGERY.

Vasileios Alivizatos\(^*\), Panagiota Demetriou\(^2\), Levan Tchabashvili\(^2\), Konstantinos Tasios\(^2\), Pavlos Athanasopoulos\(^2\)

\(^1\)Surgery, Nutrition Unit, \(^2\)Surgery, GENERAL HOSPITAL OF PATRA, Patra, Greece

Objectives: Clinical studies over the last 10 years have shown that the application of ERAS programs in patients undergoing elective major colorectal surgery, compared with conventional perioperative treatment, is associated with lower incidence of postoperative complications and shorter length of hospital stay. However, there is limited evidence regarding the results and safety of this practice in special categories of patients such as those undergoing emergency surgery. The aim of this study was to determine whether the implementation of an ERAS program is associated with improved outcome in patients undergoing emergency major colorectal surgery.

Methods: Fifteen consecutive patients with an ASA grade < 4 undergoing emergency major colorectal surgery and treated according to an ERAS regimen were prospectively studied and compared with 15 consecutive patients undergoing emergency major colorectal surgery also, but treated with the conventional perioperative care. There were evaluated the incidence of postoperative complications, length of hospital stay, incidence of relaparotomies, readmissions and mortality within 30 days. Descriptive values are expressed as mean as ± SD. Data analysis was done by the use of \(\chi^2\)-test and Mann-Whitney U test. The protocol of the study was approved by the Scientific and Ethical Committee of our Hospital.

Results: The mean age of the ERAS patients was 62.6 ± 13.3 years vs 67.6 ± 15.1 years of the non-ERAS group. The two groups were similar with respect to gender, ASA grade, type of disease and type of surgery. Incidence of major postoperative complications was 26.6% in the ERAS vs 33.3% in the control group, (p=0.6). Also, there were no differences between the two groups regarding readmissions (none in both groups), relaparotomies (one in each group) and mortality (one in the ERAS and two in the non-ERAS group). The length of hospital stay was shorter in the ERAS group (9.6 ± 4 in the ERAS vs 11 ± 3.9 days in the non-ERAS group), although this difference was not statistically significant (p=0.1).

Conclusion: The application of ERAS programs in patients undergoing emergency major colorectal surgery is a safe perioperative practice because it does not add more risk in terms of morbidity and mortality compared with the conventional perioperative treatment, whereas it may be associated with shorter length of hospital stay. Further research is needed to draw definitive conclusions.

Disclosure of Interest: None Declared
RETROSPECTIVE ANALYSIS OF PERIOPERATIVE TEMPERATURE CONTROL IN PATIENTS UNDERGOING COLORECTAL SURGERY SINCE IMPLEMENTATION OF ENHANCED RECOVERY AFTER SURGERY (ERAS)

Vera Lim¹, Jonathan Tan¹, Yin Pheng Cheang², Kwang Yeong How² on behalf of TTSH ERAS Core Team
¹Anaesthesiology Intensive Care and Pain Medicine, ²Department of General Surgery, Tan Tock Seng Hospital, Singapore, Singapore

Objectives: Mild hypothermia is associated with poorer recovery. This study aims to review temperature control since ERAS implementation.

Methods: Data is obtained from the ERAS³ Interactive Audit System, GraphPad Prism 7.0 used for Fisher’s exact and unpaired t-tests.

Results:

<table>
<thead>
<tr>
<th>ASA</th>
<th>No. of pts &lt;36.0 °C</th>
<th>&gt;36.0°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 (1.9)</td>
<td>6 (2.4)</td>
</tr>
<tr>
<td>2</td>
<td>49 (46.2)</td>
<td>151 (59.4)</td>
</tr>
<tr>
<td>3</td>
<td>55 (51.9)</td>
<td>97 (38.2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No. of pts</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemicolecotomy</td>
<td>25 (23.6)</td>
<td>45 (25.2)</td>
</tr>
<tr>
<td>Total/Subtotal colectomy</td>
<td>1 (0.9)</td>
<td>8 (3.1)</td>
</tr>
<tr>
<td>Sigmoid resection</td>
<td>34 (32.1)</td>
<td>94 (37.0)</td>
</tr>
<tr>
<td>Anterior resection of rectum</td>
<td>33 (31.1)</td>
<td>72 (28.3)</td>
</tr>
<tr>
<td>Abdominoperineal resection (APR)</td>
<td>9 (8.5)</td>
<td>6 (2.4)</td>
</tr>
<tr>
<td>Others</td>
<td>4 (3.8%)</td>
<td>9 (3.5)</td>
</tr>
<tr>
<td>Open approach</td>
<td>10 (9.4%)</td>
<td>23 (9.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Mean (min)</th>
<th>Median (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical time</td>
<td>300</td>
<td>265</td>
</tr>
<tr>
<td>No. pts transfused</td>
<td>7 (6.6)</td>
<td>548</td>
</tr>
<tr>
<td>Mean blood transfused</td>
<td>35 (13.8)</td>
<td>394</td>
</tr>
<tr>
<td>Mean crystalloids given</td>
<td>1286</td>
<td>1112</td>
</tr>
<tr>
<td>Body surface warming device</td>
<td>103 (97.2)</td>
<td>94 (88.8)</td>
</tr>
<tr>
<td>Fluid warmer</td>
<td>246 (96.9)</td>
<td>227 (89.4)</td>
</tr>
<tr>
<td>Both</td>
<td>224 (88.2)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complications No. of Pts</th>
<th>Mean (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>44 (41.5)</td>
</tr>
<tr>
<td>Postoperative haemorrhage</td>
<td>3 (2.8)</td>
</tr>
<tr>
<td>Reoperation</td>
<td>3 (2.8)</td>
</tr>
<tr>
<td>Infected wound (p=0.365)</td>
<td>3 (2.8)</td>
</tr>
</tbody>
</table>

(%) Lap: laparoscopic. No.: number. Pts: patients. POD: postoperative day.

Of 360 patients between April 2016 and November 2017, 29.4% were hypothermic (35.2% in 2017, 23.4% in 2016), possibly contributed by more APRs done in 2017 (12 out of 15) where there are larger surface areas of exposure.

In the hypothermic group, there were more ASA 3 patients and APRs. No significant difference in surgical time, volume of fluids given or usage of warming devices.
There were significantly greater cardiovascular complications, AMI and postoperative haemorrhage in the hypothermic group. Majority of the complications were not hypothermia-related.

**Conclusion:** Despite few open surgeries and use of warming devices, hypothermia prevails in one third of patients. Preoperative conservation of heat with warming blankets while waiting, intraoperative use of warm wash and warm gas insufflation should be considered, with focus on ASA 3 patients who are already at greater risks of perioperative complications.


**Disclosure of Interest:** None Declared
LAPAROSCOPIC ELECTIVE COLONIC RESECTIONS IN ERAS PATIENTS WITHOUT THE USE OF URINARY CATHETERIZATION
Vilde Victoria Logavlen¹, Elina Styve¹, Eivind Warberg¹
¹Østfold Hospital Norway, Sarpsborg, Norway

Objectives: Urinary catheterization (UC) is used in colorectal surgery to monitor urinary output, decompress the bladder and avoid urinary retention (UR). In recent years several studies have showed a decreased rate of UTI with early removal of urinary catheters. When implementing the ERAS protocol Østfold Hospital decided to discontinue its practice of UC as a part of standard preoperative care amongst patients who had an expected surgery time of less than two hours. We investigated the incidence of postoperative UR and how UR was handled amongst said patients.

Methods: We retrospectively enrolled all ERAS patients undergoing elective colonic resection from April 2017 through December 2017 with expected surgery time <2 hours. Patients who received an UC preoperatively were excluded. UR was defined as postoperative bladder residual volume of >400mL or inability to void urine with bladder discomfort. All patients who did not have spontaneous urination at the postoperative department underwent ultrasonographic bladder scan. Patient demographics, rate of postoperative UR and rate and timing of peri- and postoperative UC were examined. X² test was used to determine significant correlation between patient demographics and incidence of UR.

Results: 54 patients were included. Laparoscopic right hemicolectomy was the most common procedure (81,4%). Postoperative UR occurred in 11 patients (20,3%). One patient received an UC peroperatively due to iatrogenic bladder injury. 6 patients with UR underwent single-procedure UC and had spontaneous urination after this. 4 patients experienced more than 1 episode of UR and received a permanent catheter. 1 patient immediately received a permanent catheter. There was no statistical significance between gender (p = 0,639) or age (p = 0,452) and incidence of UR. Overall 43 patients (79,6%) successfully underwent colonic segmental resection without the need of UC during their hospitalization.

Conclusion: We suggest that laparoscopic segmental colonic resections with expected surgical time less than two hours can be performed without urinary catheterization. Further studies are needed to investigate the group of patients who experienced UR to aid in selection of patients for UC and avoid UR as a complication.

Disclosure of Interest: None Declared
DISCONTINUING PHARMACOLOGICAL THROMBOPROPHYLAXIS AT DISCHARGE AMONGST COLORECTAL ERAS PATIENTS, IS IT SAFE?

Vilde Victoria Løgavlen*, Elina Styve, Eivind Warberg

Østfold Hospital Norway, Sarpsborg, Norway

**Objectives:** The ERAS guidelines recommend extended pharmacological thromboprophylaxis (PTP) to all colorectal cancer patients. The necessity of this has recently been questioned, especially for patients undergoing laparoscopic resections. At Østfold Hospital PTP is discontinued at discharge for all colorectal surgical patients, except those with an increased risk of venous thromboembolisms (VTE). We investigated the incidence of deep venous thromboembolisms (DVT) and pulmonary embolisms (PE) amongst all ERAS patients operated from April 2017 through November 2017.

**Methods:** All elective ERAS patients from April 2017 through November 2017 were retrospectively enrolled. Endpoint was VTE within 6 or 12 postoperative weeks. Patients undergoing surgery in November were only included in the 6 week follow-up. Patient demographics, use of anticoagulants prior to surgery due to comorbidities, type of surgery, length of postoperative PTP and incidence of DVT and PE were examined.

**Results:** 91 patients met the inclusion criteria. 52 patients underwent laparoscopic right-sided hemicolecotomy (57,1%). 39 patients (42,9%) used anticoagulants prior to surgery due to comorbidities and were thus discharged with the same therapy as used on admission. The median stay and hence median time of PTP was 5 days. 2 patients (2,2%) were diagnosed with PE 2 and 3 weeks postoperatively. The surgeries performed were laparoscopic sigmoidal resection and laparoscopic ileocecal resection. Histology showed adenocarcinoma and inflammation suggestive of Chron's disease, respectively. None of the patients diagnosed with VTE used anticoagulant therapy preoperatively. At 12 week follow-up one patient was diagnosed with superficial thrombophlebitis, there were no patients with VTE. None of the patients who underwent rectal surgery were diagnosed with VTE.

**Conclusion:** The incidence of symptomatic VTE in our population was found to be comparable to the incidence of VTE amongst colorectal surgical patients given PTP. Although our study has weaknesses due to being retrospective, including both cancer and non-cancer patients and only symptomatic patients were screened for VTE, results might suggest that the duration of antithrombotic therapy after laparoscopic colorectal surgery can be reduced. We suggest further study into the area.

**Disclosure of Interest:** None Declared
AN INTERACTIVE SOFTWARE PLATFORM FOR MONITORING SUCCESSFUL IMPLEMENTATION OF ERAS® FOR PANCREATICODUODENECTOMY

William B. Lyman¹, Michael Passeri², Keith Murphy², David A. Iannitti², John B. Martinie², Erin H. Baker², Brent D. Matthews¹, Dionisios Vrochides²
¹Department of Surgery, ²Division of HPB Surgery, Carolinas Medical Center, Charlotte, United States

Objectives: A lack of specialty specific evidence as well as a perceived need for additional resources may deter many healthcare institutions from instituting ERAS®. Our goal was to create an interactive platform to monitor outcomes and resource utilization in real time during our implementation of ERAS® for pancreaticoduodenectomy (PD).

Methods: In 2015 we began developing an interactive platform to monitor outcomes (clinical, financial, and patient reported) that is updated in real time from our departmental REDCAP™ data repository. This platform generates an “optimization index” termed the Carolinas Optimization Index (COPI). The index is currently validated for clinical and financial outcomes alone. We utilized COPI to monitor ERAS® implementation in real time.

Results: The Carolinas Optimization Index (COPI) was 49.05 on average prior to implementation of ERAS® derived from a clinical factor of 49.85 and a financial factor of 47.41 (Table 1). After implementation of ERAS® in September 2015, the COPI steadily improved reflecting improved outcomes and decreased resource utilization with an overall average COPI of 50.87 derived from a clinical factor of 50.13 and a financial factor of 52.38. COPI has continued to improve, surpassing 52.00 over the last 3 months monitored from continued improvement of both clinical and financial outcomes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Outcomes Index</td>
<td>49.85</td>
<td>50.13</td>
</tr>
<tr>
<td>Financial Outcomes Index</td>
<td>47.41</td>
<td>52.38</td>
</tr>
<tr>
<td>Carolinas Optimization Index (COPI)</td>
<td>49.05</td>
<td>50.87</td>
</tr>
</tbody>
</table>

Table 1: Clinical, Financial, and COPI indices calculated over equivalent time periods prior to and after ERAS® implementation in September 2015

Conclusion: Along with the ERAS® Interactive Audit System (EIAS) for audit and compliance monitoring, the Carolinas Optimization Index has been a valuable tool to monitor improvements in clinical outcomes and resource utilization during implementation of ERAS® for PD at our institution. We expect that monitoring and utility of our interactive software platform will further improve with the addition of patient reported outcomes to the current index.

Disclosure of Interest: None Declared
DOES ERAS® IMPLEMENTATION RESULT IN IMPROVED OUTCOMES FOR MINIMALLY INVASIVE LEFT PANCREATECTOMIES?

William B. Lyman*, Michael Passeri2, Allyson Cochran2, David A. Iannitti2, John B. Martinie2, Erin H. Baker2, Dionisios Vrochides2

1Department of General Surgery, 2Division of HPB Surgery, Carolinas Medical Center, Charlotte, United States

Objectives: Recent studies in colorectal surgery literature have suggested that the benefits of Enhanced Recovery After Surgery (ERAS®) are an artifact of an increased emphasis and the subsequent benefits of minimally invasive surgery (MIS) in those centers employing ERAS®. Our division has performed over 60% of all LPs in MIS fashion since 2008 (either laparoscopic or robotic-assisted). We implemented ERAS® for LPs in August 2016. Our objective was to evaluate clinical outcomes before and after implementation of ERAS for our MIS LPs. We hypothesized that we would see an additional benefit of ERAS® in combination with MIS LPs.

Methods: We retrospectively evaluated a prospectively collected REDCap™ database to identify all MIS LPs performed at our institution after implementation of ERAS® for LPs in August 2016 (n=36). Eighteen robotic-assisted and eighteen laparoscopic left pancreatectomies were performed after ERAS® implementation. The most recent MIS LPs prior to ERAS implementation were matched for operative approach and compared to our post-ERAS® cohort (n=72). The pre and post ERAS implementation cohorts were then compared with STATA® statistical software using a combination of Wilcoxon rank-sum and Pearson’s chi-squared tests.

Results: We found no significant difference in clinical outcomes between pre and post-ERAS® MIS LPs at our institution to date. After matching for operative approach (robotic-assisted or laparoscopic), the post ERAS® implementation cohort was more likely to be female and present for mucinous cystic neoplasm (p=0.001 and 0.024 respectively). (Table 1)

<table>
<thead>
<tr>
<th></th>
<th>Pre-ERAS® (n=36)</th>
<th>Post-ERAS® (n=36)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>60.9</td>
<td>56.1</td>
<td>0.226</td>
</tr>
<tr>
<td>BMI (mean)</td>
<td>28.5</td>
<td>31.6</td>
<td>0.159</td>
</tr>
<tr>
<td>Hospital LOS (median)</td>
<td>5</td>
<td>5</td>
<td>0.900</td>
</tr>
<tr>
<td>Tumor Size</td>
<td>44.8</td>
<td>47.8</td>
<td>0.477</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>27</td>
<td>0.001</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>10</td>
<td>8</td>
<td>0.586</td>
</tr>
<tr>
<td>Mucinous Cystic Neoplasm</td>
<td>1</td>
<td>7</td>
<td>0.024</td>
</tr>
<tr>
<td>IPMN</td>
<td>6</td>
<td>2</td>
<td>0.134</td>
</tr>
<tr>
<td>Conversions</td>
<td>1</td>
<td>0</td>
<td>0.314</td>
</tr>
<tr>
<td>Pancreatic Fistula (B/C)</td>
<td>3</td>
<td>5</td>
<td>0.0453</td>
</tr>
<tr>
<td>Reoperations</td>
<td>0</td>
<td>0</td>
<td>1.000</td>
</tr>
<tr>
<td>Death &lt; 30 days</td>
<td>0</td>
<td>0</td>
<td>1.000</td>
</tr>
<tr>
<td>Readmission &lt; 30 days</td>
<td>5</td>
<td>8</td>
<td>0.358</td>
</tr>
</tbody>
</table>

Conclusion: Although we found no significant benefit to ERAS® on clinical outcomes for MIS left pancreatectomies performed at our institution, we must stress that this study poses a high risk for committing a type II error given our relatively small sample size of 36 patients analyzed since implementation of ERAS®. We will continue to evaluate if there is any additional benefit of ERAS® protocol for our patients undergoing minimally invasive left pancreatectomies periodically.

Disclosure of Interest: None Declared
VALIDATION AND APPLICATION OF A MODULE OF THE M. D. ANDERSON SYMPTOM INVENTORY FOR MEASURING SYMPTOM BURDEN IN PATIENTS WITH GYNECOLOGIC CANCER (MDASI-PERI-GYN) FOR PERIOPERATIVE CARE

Xin Shelley Wang\(^1\), Qiuling Shi\(^1\), Lori Williams\(^1\), Charles Cleeland\(^1\), Araceli Garcia\(^1\), Pedro Tomas Ramirez\(^2\), Maria Iniesta\(^2\), Ashley Siverand\(^2\), Larissa Meyer*\(^2\)

\(^1\)Dept of Symptom Research, \(^2\)Dept of Gynecologic Oncology, MD ANDERSON CANCER CENTER, Houston, United States

**Objectives:** Collecting patient reported outcomes (PROs) in perioperative care is increasingly common. We report the development and validation of a module of MDASI for use in patients with gynecologic (GYN) cancer for perioperative care.

**Methods:** Patients who underwent GYN surgery participated in module development and validation. The process included:
1. generating Peri-GYN-specific candidate items with input from GYN oncologists and from qualitative interviews, and adding these to the core MDASI for testing;
2. dropping candidate GYN items that lacked sensitivity;
3. validating the psychometric properties (reliability, validity) of the resulting MDASI-GYN; and
4. conducting cognitive debriefing interviews with patients to confirm the questionnaire’s ease of comprehension, relevance, and acceptability.

**Results:** Eleven GYN-module symptom items were generated from the first two steps, and added to the original 19 MDASI symptom and interference items to form the MDASI-Peri-GYN for validation. There were 147 patients (Minimally-invasive surgery (MIS)=69, open surgery=78) who participated with 122 also providing retest data. Cognitive debriefing in 20 patients demonstrated that, to patients, the MDASI-Peri-GYN is an easy-to-use and understandable tool. Two items were dropped based on the psychometric analysis and patients’ debriefing. The module symptom by severity included: bloating, abdominal cramp, constipation, hot flash, dizziness, groggy or confusion, urinary pain, difficult urinating and diarrhea. Cronbach alphas were 0.89 and 0.86 for 22 symptom severity items and 6 interference items, respectively. Test-retest reliability (intra-class correlation) was 0.88 for 22 symptom severity items. Known-group validity (sensitivity) was supported by the MDASI-GYN’s detection of significant differences in symptom and interference levels according to performance status (\(P < .001\)) and MDASI core by open surgery or MIS (\(P<.01\)). There were no observed significant differences of severity on module items between open and MIS during hospitalization.

**Conclusion:** The MDASI-GYN is a valid, reliable, and concise tool for measuring symptom severity and interference with function in patients with GYN cancers during the perioperative period and can be useful in assessing the impact of ERAS.

**Disclosure of Interest:** None Declared
OVERCOMING BARRIERS AND IMPROVING ADHERENCE TO NUTRITIONAL PROTOCOLS IN ENHANCED RECOVERY AFTER SURGERY (ERAS) FOR COLORECTAL SURGERY
Ya Lan Hu\textsuperscript{1}, Lan Pei Kong\textsuperscript{1}, Kitty Ho*\textsuperscript{1} on behalf of TTSH ERAS Core Team: Dr How Kwang Yeong, Dr Liu Hui Min, Dr Jonathan Tan, Dr Vera Lim, Mr Jayachandran Balachandran, Ms Ong Yawei
\textsuperscript{1}Nursing, Tan Tock Seng Hospital, Singapore, singapore, Singapore

Objectives: Nutrition is an essential component of Enhanced Recovery After Surgery (ERAS) programs. ERAS programs advocate resumption of diet within a few hours post surgery with supplementation of high-calorie drinks. In March 2016, Tan Tock Seng Hospital started to adopt ERAS protocols for elective colorectal surgery. However, internal audits and retrospective review of our data indicated poor compliance with ERAS nutritional protocols. Our aim was to identify barriers and develop strategies to improve adherence to ERAS nutritional protocols, so as to facilitate the integration of nutritional protocols within ERAS.

Methods: In July 2016, a multidisciplinary project team was formed. Root cause analysis was carried out with different stakeholders. Four actionable barriers were identified in the implementation of nutritional aspect of ERAS: 1) unfamiliarity with new ERAS protocols; 2) confusion caused by an outdated existing Colorectal Clinical Pathway; 3) reluctance to adopt new practice; and 4) resource limitation and logistic issues. Strategies implemented included: educational talks to staff and patients on ERAS nutritional protocols to disseminate the practice changes; revising the existing Colorectal Clinical Pathway to align with new ERAS nutritional protocols; sharing favourable results to convince staff and overcome resistance; conducting frequent meetings to reflect on practice, build teamwork and align different ward cultures; identifying and training ERAS champions in different wards as ERAS advocates; collaborating with pharmacy to store nutritional supplements at the ward level to promote early oral nutrition.

A comparison of pre and post-implementation of strategies on ERAS nutritional compliance and clinical outcomes were carried out during the period of March to October 2016 (n=135) and Nov 2016 to July 2017(n=157).

Results: Overall, adherence to ERAS nutritional measures improved by 25% with an overall increasing trend. Patients recovered faster with decreased median length of stay from 7 to 6 days, complication rate dropped from 47.4% to 39.5% and 30 days readmission rate from 7.2% to 5.2%.

Conclusion: Implementation of strategies addressing actionable barriers successfully improved adherence to nutritional standardisation of ERAS protocols and clinical outcomes following colorectal surgery.

Disclosure of Interest: None Declared
**P101**

**INCORPORATING ENHANCED RECOVERY AFTER SURGERY (ERAS) COMPONENTS INTO AN EXISTING ELECTIVE COLORECTAL CLINICAL PATHWAY LEADS TO IMPROVED ADHERENCE TO ERAS PROTOCOLS**

Ya Lan Hu*, Jacqueline Lin¹, Lan Pei Kong¹, Kitty Ho¹ on behalf of TTSH ERAS Core Team: Dr How Kwang Yeong, Dr Liu Hui Min, Dr Jonathan Tan, Dr Vera Lim, Mr Jayachandran balachandran, Ms Ong Yawei

¹Nursing, Tan Tock Seng Hospital, Singapore, singapore, Singapore

**Objectives:** ERAS program is an established multimodal perioperative care approach that has become the standard in elective colorectal surgery. In March 2016, Tan Tock Seng Hospital adopted ERAS protocols for elective colorectal surgery, however participation and compliance to the ERAS protocols were low. Another huge challenge faced was the collection and management of data due to manpower constraints.

Our aim was to incorporate the key evidence-based ERAS components into our existing Elective Colorectal Clinical Pathway with the main aim of improving compliance. Our secondary aim was to develop a workflow to facilitate ERAS data management.

**Methods:** In July 2016, a multidisciplinary project team was formed. The team identified key ERAS elements and incorporated them into our existing Elective Colorectal Clinical Pathway. A revised Colorectal Clinical Pathway was piloted for 3 months and implemented in November 2016.

Brainstorming and root cause analysis were carried out to identify challenges and possible solutions for ERAS data management. The team streamlined the role of different stakeholders and developed a workflow for data management. A comparison of pre and post-implementation of revised Elective Colorectal Clinical Pathway on 23 ERAS compliance measures and clinical outcomes were carried out during the period of March to October 2016 (n=135) and Nov 2016 to July 2017 (n=157).

**Results:** Overall, 70% (16 out of 23) of ERAS compliance measures showed improvement. 91% (10 out of 11) of post-operative ERAS compliance measures showed improvement with the highest improvement rate of 36% for mobilization on Post-operative Day 2.

Patients recovered faster with decreased median length of stay (from 7 to 6 days), complications rate (from 47.4% to 39.5%) and 30 days readmission rate (from 7.2% to 5.2%). Data completeness increased from 70% to 97.6% for overall ERAS hospital compliance measures.

**Conclusion:** Incorporating ERAS protocols into existing Colorectal Clinical Pathway successfully improved adherence to the standardized multimodal ERAS protocols and clinical outcomes following colorectal surgery. Role and workflow redesign facilitated data management.

**Disclosure of Interest:** None Declared
P102
RELATIONSHIP BETWEEN OUTCOMES AND COMPLIANCE TO THE ERAS PROTOCOL FOR COLORECTAL SURGERY – A SINGLE INSTITUTION EXPERIENCE
Yu Liang Lim1, Qin Yi Lee2, Vera Lim2, Jonathan Tan2, Hui Min Liu2, Tse Han Loong2, Kar Yong Wong2, Sau Shung Fong2, Guan Sze Tay2, Kwang Yeong How2 on behalf of TTSH ERAS Core Team
1Yong Loo Lin School of Medicine, National University of Singapore, 2Tan Tock Seng Hospital, Singapore, Singapore

Objectives: Enhanced Recovery After Surgery encompasses evidenced based perioperative components that work synergistically to reduce postoperative stress and preserve physiological function. Compliance to ERAS protocols has demonstrated a positive dose dependent relationship to outcomes. We review our results of our ERAS Program for Colorectal Surgery to evaluate if a similar trend is demonstrated.

Methods: Data prospectively collected in the ERAS Interactive Audit System (EIAS) for patients undergoing elective colorectal surgery in a tertiary hospital in Singapore from March 2016 to August 2017 was analyzed retrospectively. Results of patients who achieved higher (≥75%) compliance to the protocol were compared to those with a lower (<75%) compliance. The primary outcome measure was length of stay. Secondary outcomes were complication rates and readmission rates. Subgroup analysis of the 2 groups was performed to evaluate compliance to the protocol in each of the perioperative phases.

Results: A total of 303 elective colorectal resections were performed between March 2016 to August 2017. Overall mean compliance for the entire cohort was 77.4%, out of which 184 (60.7%) patients achieved ≥75% compliance to the protocol. Compared to the group with lower compliance, this group had a shorter median length of stay (5 days vs 7 days, p<0.001), as well as a lower complication rate (p=0.001). There is no significant difference in readmission rates between the two groups. Further subgroup analysis of protocol compliance in these 2 groups showed that patients with higher overall compliance to the ERAS protocol also consistently achieved better compliance in all four perioperative phases (pre-admission and pre, intra, postoperative) phases.

Conclusion: Our results are consistent with existing data which shows that a higher compliance to the ERAS protocol reduces length of stay and complication rates. Our subgroup analysis results also suggest that it is important to maintain a high level of compliance throughout the entire protocol in order to maximise the synergistic effect of all ERAS components, thus highlighting that bundle compliance is important for the overall success of the program.

Disclosure of Interest: None Declared