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OUTCOMES RESEARCH

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Perceived Effectiveness of Nutrition Education among Gastroenterology Fellows in the United States

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Purpose: The American Gastroenterological Association (AGA), the Accreditation Council for Graduate Medical Education (ACGME) and the Residency Review Committee (RRC) have mandated that all gastroenterology (GI) fellowship programs should provide the requisite training opportunities in nutrition. Despite the establishment of these guidelines, questions have been raised about the effectiveness of current curriculum used in GI fellowships. The aim of this study was to determine the perceived effectiveness of nutrition education among GI fellows.
Methods: A survey was created to collect demographic data and perceived nutritional knowledge on components of nutrition specific to GI fellows, including: nutrition assessment, nutrition support, micro/macronutrient requirements, nutrition in GI diseases and obesity. A list of all 162 U.S. accredited fellowship programs and the contact information for all their fellowship coordinators was obtained from the AGA website. All fellowship coordinators were sent an email asking them to forward an internet link to SurveyMonkey™ website, where fellows could anonymously complete the survey. Results were tallied using SurveyMonkey™.
Results: Of the approximately 1,400 GI fellows in the U.S., 137 fellows attempted the survey (66.4% males, 33.6% females). Postgraduate year of training was distributed equally among first, second and third year fellows (49, 49 and 39 fellows, respectively). Of the fellows surveyed, 83.9% reported receiving no formal education in nutrition before fellowship. During fellowship, 34.3% reported receiving no formal education, 51.1% reported some nutritional education, and 14.6% reported completion of a formal rotation or training in nutrition. The majority of fellows (86.6%) reported that they would like to have more nutrition-focused education. Only 5.1% fellows reported that they planned on specializing in nutrition and incorporating it into their practice. Fellows perceived themselves as having the least knowledge in micro/macronutrients and providing nutritional support to patients. Included in analysis, only 45.5% of GI fellows reported a good understanding of nutrition as it relates to obesity. Fellows perceived themselves as having the strongest knowledge in technical skills to manage nutritional issues.
Conclusion: Current nutritional curriculum used in most GI fellowships is limited. GI fellows believe their knowledge of nutrition is sub-optimal, and would like more nutrition education to be incorporated into their fellowship curriculum. Most concerning is the lack of understanding in the topic of obesity among fellows. Formal nutrition education should be developed in the context of GI fellowship education.

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Factors Influencing Safety of Sedation in a Large Cohort of Patients Undergoing Advanced Endoscopic Procedures

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Purpose: Effective and safe sedation is an important determinant of success in advanced endoscopic procedures. This study was undertaken to determine sedation-related adverse events (SRAEs) and predictors of SRAEs.
Methods: A prospectively maintained database for all patients undergoing endoscopic retrograde cholangiopancreatography (ERCP) and upper endoscopic ultrasound (EUS) between January 2008 and June 2011 at a tertiary referral university-affiliated teaching hospital was reviewed. The study included 1,759 procedures (942 ERCP, 817 EUS, M/F 38.8/61.2%, age 55.9 ± 20 years, BMI 28.4 ± 7.4 kg/m^2). The predominant mode of anesthesia was certified registered nurse anesthetist-assisted monitored anesthesia care (MAC) in 898 procedures, general anesthesia (GA) in 819 and registered nurse-assisted conscious sedation (CS) in 42 patient procedures. Multivariate logistic regression analysis was performed to identify predictors for SRAEs.
Results: Out of 183 (10.4%) SRAEs, 172 were intra-procedural SRAEs (hypotension needing pressors (145 events), hypoxia (5 events), arrhythmias (12 events), unplanned intubations [8 events]), and 11 were recovery room SRAEs. Two procedures each under GA and CS were aborted because of agitation and inadequate sedation, respectively. All SRAEs were transient, and patients recovered completely. No deaths occurred. A significantly lower rate of SRAEs was noted in patients who had MAC (6.1%) versus GA (14.7%), p<0.001. Patients with ASA III and IV had higher intra-procedural SRAEs, at 16.5 and 20.4%, respectively. SRAEs in ERCP (11%) and EUS (8%) were comparable. Multivariate logistic regression identified age, sex, BMI, procedure duration, coronary artery disease (CAD) (odds ratio [OR] 1.73, p=0.017), renal disease (OR 3.12, p=0.002), malignancy (OR 1.59, p=0.035), ASA class (OR 1.61, p=0.003), and GA (OR 2.84, p<0.001) as the independent predictors for SRAEs.
Conclusion: A combination of patient demographics (female sex, older age, high BMI), comorbidities (CAD, CKD, malignancy), GA as mode of anesthesia and higher ASA class are associated with increased SRAEs during advanced endoscopic procedures.

[1553] Multivariate logistic regression analysis of factors associated with sedation related adverse events (SRAEs)

Variable	Odds ratio	95% CI	P value
Patient Characteristics			
Age	1.02	1.01–1.03	0.002
Sex	0.62	0.44–0.88	0.007
BMI	1.02	1.001–1.05	0.04
Indications			
Biliary Stricture	1.03	0.47–2.23	0.944
Comorbidities			
HTN	0.84	0.57–1.25	0.387
CAD	1.73	1.1–2.70	0.017
Malignancy	1.59	1.03–2.46	0.035
Renal disease	3.12	1.53–6.4	0.002
Procedure Variables			
Duration	1.01	1.001–1.01	0.027
Interventions (>2/<2)	0.81	0.56–1.14	0.219
MOA	2.84	1.18–2.22	<0.001
ASA Class	1.61	1.94–4.16	0.003

CI=Confidence Interval, BMI=Body mass Index, HTN=Hypertension, CAD=Coronary artery disease, MOA=Mode of anesthesia, ASA=American society of anesthesiologists.

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Blood Urea Nitrogen as a Prognostic Indicator of Non-variceal Upper Gastrointestinal Bleed

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Purpose: Non-variceal upper gastrointestinal tract bleeding is a life-threatening disorder affecting approximately one per 1,000 people per year. Several risk-scoring systems (Rockall, Blatchford) have been developed for the assessment of patients presenting with upper gastrointestinal hemorrhage with some differences, including sources of bleeding and outcome of interest. We hypothesize that simple biochemical parameters, such as the blood urea nitrogen (BUN) level, will be able to predict outcomes in patients with non-variceal upper gastrointestinal bleeds.
Methods: We did a retrospective chart review of 100 consecutive patients admitted with a diagnosis of non-variceal upper gastrointestinal bleed. We collected pertinent data related to patient demographics, coexisting co-morbidities, admission laboratory results, endoscopic findings and specific outcomes (listed below). We defined our high BUN cohort as those patients who presented with a level >20. Our primary endpoints were whether elevated BUN could predict the length of hospital stay (LOS) and the need for intensive care unit (ICU) admission. Our secondary endpoints were the association of high BUN with high grade endoscopic findings (defined as Forrest Classification Grade Ia, Ib and IIa), ICU LOS, and a composite endpoint of the need for surgery and occurrence of rebleed.
Results: More patients in the high BUN group were admitted to the ICU (6.25% vs. 40.4%, p=0.007). Among patients admitted to the ICU, those with a low BUN had a shorter ICU LOS (1.0 vs. 3.8 days, p=0.02). We were able to predict the high-grade endoscopic findings with the BUN levels with an excellent degree of sensitivity, but poor specificity (100% and 24% respectively). Taking a composite endpoint for need for surgery or rebleed in 30 days, the cohort with a higher BUN had a higher incidence of poor outcomes (46.4% vs. 12.5%, p=0.04).Patients with a high BUN had a longer hospital length of stay (10.2 vs. 8.2 days). However, this difference did not reach statistical significance (p=0.36).
Conclusion: Our study concludes that a readily available parameter like BUN can help predict the likelihood of admission to the ICU, ICU LOS and occurrence of complications in patients with non-variceal upper GI Bleed. BUN also predicts the grade of the peptic ulcer findings with excellent sensitivity. Further studies are required to assess the utility of this test in a prospective manner.

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Experience in the Management of Upper Gastrointestinal Bleeding and Outcomes in Patients Taking Dabigatran Compared with Warfarin: A Retrospective, Comparative Study

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Purpose: Dabigatran is an effective treatment for stroke prevention in patients with atrial fibrillation without the need of laboratory monitoring. However, considering higher risk of gastrointestinal (GI) bleeding from the RELY study, unavailability of laboratory monitoring, and absence of reversal

agent, we expected outcome differences between patients with GI bleeding from dabigatran and warfarin.

Methods: We retrospectively studied clinical outcomes and length of stay in patients who were hospitalized at St. John Hospital for GI bleeding from dabigatran compare with warfarin with therapeutic INR during 2009 to 2012. Initial laboratory findings at presentation, length of stay, number of packed red bleed cell (PRBC) transfusion, acute kidney injury, and clinical outcomes such as hypotension, tachycardia, ICU admission, and death were compared.

Results: Thirteen patients taking dabigatran and 26 patients who were on warfarin with therapeutic INR were hospitalized for GI bleeding during 2009 to 2012. Demographic data and baseline parameter between the two groups were not significantly different except for concurrent aspirin use (Table 1). Fifty-four percent of patients taking dabigatran did not have aPTT level performed at presentation (7/13). INR of the warfarin group was significantly higher than the dabigatran group (2.54±0.3 vs. 1.81±0.9, p= 0.01). The patients with GI bleeding from warfarin received significantly more PRBC transfusion compared to the dabigatran group (1.92±2.2 units vs. 0.69±1.1 units, p= 0.024) even after controlling for history of chronic kidney disease and first hemoglobin at presentation (b=1.013, p=0.043; Figure 1). Hypotension at presentation was more common in the warfarin group than dabigatran but p-value was insignificant (30.8% vs. 7.7%, p= 0.11). Nevertheless, no differences in clinical outcomes or length of stay were found between the two groups.

Conclusion: From our data, the patients with GI bleeding from dabigatran were likely to receive less PRBC transfusion; however, clinical outcomes and length of stay were comparable to GI bleeding causing by warfarin. Our sample also represents safety profile of dabigatran in elderly population with CrCl >30 mL/min who experience GI bleeding.

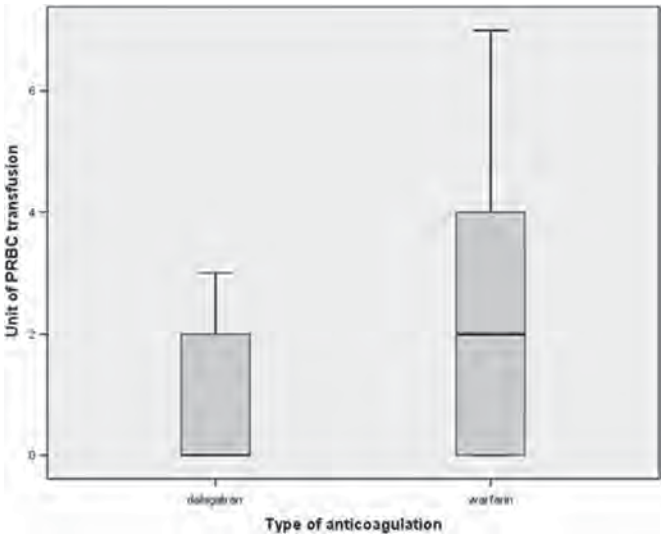
[1555] Table 1. Demographic data, past medical history, active medications, and baseline laboratory results

	Dabigatran	Warfarin	P-value
Frequency (*n*)	13	26	—
Mean age (years±SD)	77.9±9.9	76±10.2	0.59
Sex (male, female)	4, 9	14, 12	0.17
Race (Caucasian, African American)	11, 2	16, 10	0.14
BMI	34.9±14.4	30.0±7.5	0.26
Diabetes mellitus (*n*)	3	12	0.16
Hypertension (*n*)	12	23	0.46
Coronary artery disease (*n*)	7	18	0.35
Diverticulosis (*n*)	5	12	0.65
History of colonic polyp (*n*)	4	7	0.8
Hemorrhoids (*n*)	2	7	0.42
GI cancer (active, cured)	0, 2	1, 1	0.36
History of gastric cancer (*n*)	0	2	0.31
Sick sinus syndrome (*n*)	2	4	1.0
CrCl 30 ml/min (*n*)	12	25	0.88
CrCl < 30 ml/min (*n*)	1	1	
Beta blocker n, (%)	11	22	1.0
Calcium channel blocker *n*, (%)	1	5	0.35
Other antiarrhythmic*(*n*)	5	10	0.57
Aspirin (*n*)	11	13	0.036
Clopidogrel (*n*)	0	3	0.2
Mean Baseline hemoglobin (mg/dL)	11.6±1.7	11.7±1.7	0.83
Mean baseline Creatinine (mg/dL)	1.03±0.4	1.14±0.4	0.46
Mean baseline platelet count (103/microL)	219±84.9	215.5±64.4	0.90

*other antiarrhythmic includes digoxin, amiodarone, propafenone, etc.

[1555] Table 2. Initial clinical presentation, initial laboratory results, and clinical outcome of patients who presented with GI bleed in both groups

	Dabigatran	Warfarin	P-value
UGIB *n*, (%)	0	1 (3.8%)	—
LGIB *n*, (%)	11 (84.6%)	20 (76.9%)	0.61
Symptomatic anemia *n*,(%)	2 (15.4%)	5 (19.2%)	0.81
Hypotension *n*, (%)	1 (7.7%)	8 (30.8%)	0.10
Tachycardia *n*, (%)	3 (23%)	5 (19%)	0.77
Initial Hb at presentation (mg/dL)	10.4±2.1	9.59±2.6	0.34
INR	1.81±0.9	2.537±0.3	0.01
AKI *n*,(%)	4 (31%)	5 (19%)	0.42
PRBC transfusion (units)	0.69	1.92	0.024
Length of stay (days)	5.6	5.88	0.86
ICU *n*, (%)	1 (7.7%)	1 (3.8%)	0.61
Death *n*, (%)	1 (7.7%)	1 (3.8%)	0.61



[1555] Figure 1: Unit of PRBC transfusion among the two groups. (p=0.02).

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Clinical Prediction Rules for Hospital-onset *Clostridium difficile* Infection: A Systematic Review

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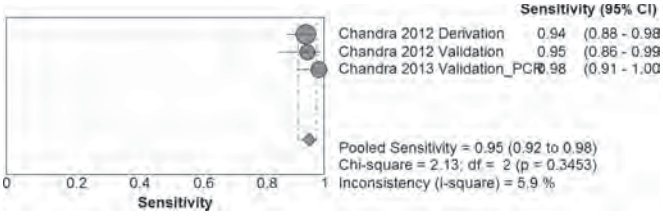
Purpose: The risk stratification for hospital-onset *Clostridium difficile* infection (CDI) enables opportunity for focused and early intervention. In this study, we aimed to perform a comprehensive systemic review to identify clinical prediction scales for hospital-onset CDI and critical appraisal of their performance and quality of study methodology.

Methods: We performed a comprehensive search of the major databases of biomedical publications (EMBASE, Medline and SCOPUS) in the last week March 2013 to identify studies that derived or validated a clinical prediction rule (CPR) for hospital-onset CDI. Studies not based on original data,

Table 1. Quality assessment of study methodology:

Quality assessment criteria	Chandra 2011 derivation	Chandra 2012 validation	Chandra 2013 validation	Dubberke 2011	Garey 2008 derivation	Garey 2008 internal validation	Harrington 2008 external validation	Tanner 2008 cohort 1	Tanner 2008 cohort 2
1. Patients selected in an unbiased fashion (consecutive or random sample)	Y	Y	Y	Y	N	N	N	Y	Y
2. Prospective evaluation of predictors	N	N	N	N	N	N	N	Y	N
3. Study sample representative of a wide spectrum of at risk population	Y	Y	Y	Y	N	N	N	Y	Y
4. Predictor variables assessed without knowledge of the outcome	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Outcome accurately defined	Y	Y	Y	NR	Y	Y	Y	Y	Y
6. Adequate sample size (at least 10 positive outcomes per component)	Y	Y	Y	Y	Y	Y	Y	N	Y
7. Multivariate logistic regression in development	Y			Y	Y			Y	
8. Clinical implementation and impact analysis available	N	N	N	N	N	N	N	N	N

[1556A]



[1556B]

developed from or validated in selected disease or treatment group and pediatric population were excluded. For quality assessment of study methodology we developed a checklist evaluating subject selection, predictor variable and outcome assessment, adequacy of sample size and appropriate methodology in the development of a CPR.

Results: A total of 11 studies reported 9 CPRs, 4 were developed to predict hospital-onset CDI and only two of them were developed from unselected adult hospitalizations. Both these scales were developed using multiple logistic regression. Pooled sensitivity and specificity of the Greater Baltimore Medical Center scale were 0.96 (95% CI 0.92-0.98) and 0.82 (95% CI 0.81-0.82), respectively. The Washington University School of Medicine scale reported to have sensitivity of 0.60 and specificity of 0.89. Both the CPRs lack prospective and external validation and there are no studies determining their impact on clinician's behavior with introduction to the clinical practice.

Conclusion: Available CPRs for hospital onset-CDI reported promising discrimination but have only limited evidence. Future methodologically sound studies are needed before their widespread adoption in clinical practice.

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Changes of Upper GI Bleeding Mortality Risk in U.S. Population over Three Decades

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Purpose: There are studies reporting different mortality risks for UGIB. Our objective was to determine the changes of morality risk of UGIB in the last three decades based on the anatomical site and cause, using nationwide representative database.

Methods: We analyzed the National Hospital Discharge Sample (NHDS) from 1979 to 2009 and included the patients with the primary ICD-9 codes for UGIB and calculated the mortality risk in each decade based on the anatomical site and cause of bleeding. Mortality risk changes based on race, gender, number of admission days, region and hospital bed size were analyzed in each decade too.

Results: We assessed 47,283 of UGIB including 1,838 UGIB inpatient mortalities in this period. UGIB mortality risk decreased by 35.4% from 4.8% in first decade to 3.1% in third decade (P<0.001). A parsimonious model in each decade indicated that higher age and higher number of hospitalization days were significant risk factors for inpatient mortality of UGIB in all three decades, and female gender was associated with significantly lower risk in the second decade. The most significant decrease was observed in patients over 65 years and during the first day of admission. Gastric bleeding (P<0.001) and esophageal bleeding (P=0.018) showed significant decreasing mortality risk trends. Duodenal bleeding mortality risk was stable in three decades. Esophageal variceal bleeding had the highest mortality risk among other causes.

Conclusion: UGIB morality risks, especially of the first hospital day and geriatric patients, significantly decreased over the last three decades, presumably from recent advances in emergency medical care and therapies. Mortality risk of gastric, but not duodenal, bleeding had the most significant reduction.

[1557] Parsimonious multiple logistic regression model of patient risk factors for UGIB mortality

	1979–1989		1990–1999		2000–2009	
Parsimonious model	Odds Ratio (95% CI)	Mortality risk	Odds Ratio (95% CI)	Mortality risk	Odds Ratio (95% CI)	Mortality risk
Age						
20–29	1.00	0.8%	1.00	0.8%	1.00	0.6%
30–39	1.19 (0.22-6.54)	0.6%	1.48 (0.54-4.03)	1.3%	0.63 (0.14-2.81)	0.4%
40–49	3.51 (0.90-15.46)	1.7%	2.15 (0.84-5.48)	2.0%	2.51 (0.77-8.21)	1.7%
50–59	4.29 (1.01-18.22)	2.2%	2.82 (1.13-7.04)	2.7%	3.17 (0.99-10.14)	2.2%
60–69	6.22 (1.51-25.62)	3.2%	3.84 (1.56-9.46)	3.7%	3.71 (1.17-11.82)	2.6%
70+	16.72 (4.13-67.69)	8.4%	6.03 (2.48-14.65)	6.1%	5.91 (1.89-18.52)	4.2%
Addmission days						
1–4	1.00	4.6%	1.00	2.9%	1.00	2.1%
5–10	0.41 (0.31-0.55)	2.4%	0.96 (0.80-1.16)	3.1%	1.26 (1.03-1.54)	2.7%
11–15	0.91 (0.66-1.25)	5.8%	2.58 (2.04-3.26)	8.3%	2.99 (2.26-3.98)	6.7%
16+	1.96 (1.50-2.55)	12.6%	5.59 (4.61-6.77)	16.6%	7.32 (5.81-9.23)	14.5%
Female gender						
	N/A		0.79 (0.68-0.92)		N/A	

[1557] Number and mortality risk based on the disease category

	1979–1989		1990–1999		2000–2009		
	Number of event	Mortality risk%	Number of event	Mortality risk%	Number of event	Mortality risk%	P value for trend
ESOPHAGEAL	0	n/A	1505	4.3	2294	2.8%	0.018
Esophageal variceal	0	N/A	366	8.5	299	7.0	0.5
Esophageal non-variceal	0	N/A	1139	2.9	1995	2.2	0.2
GASTRIC	3468	5.2	8554	3.4	8289	2.3	<0.001
Gastric ulcers	3411	5.0	6169	3.5	5789	2.6	<0.001
Gastritis	0	N/A	2334	3.0	2459	1.1	<0.001
DUODENAL	3844	4.6	5447	4.9	4465	4.7	0.9
Duodenal ulcers	3793	4.4	5113	4.8	4179	4.6	0.6
Duodenitis	0	N/A	262	0.1	226	0.4	0.9

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Upper Gastrointestinal Bleeding Mortality Risk Changes in Patients With Comorbidities Over Three Decades

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Purpose: Our objective was to show the changes in the mortality risk of each comorbidity used in the Rockall score in patients with upper GI bleeding (UGIB) during three decades, using a nationwide representative data.

Methods: We analyzed the National Hospital Discharge Sample (NHDS) for UGIB outcomes through the last three decades from 1979 to 2009. We identified the patients with the primary ICD-9 codes representing a diagnosis of UGIB and then calculated the mortality risk, crude odds ratio and adjusted odds ratio of each comorbidity used in the Rockall score in each decade.

Results: There is a dramatic decline in mortality risk of patients with renal failure, starting from 50% in the first decade and ending up 4.0% in the third decade. Mortality risk of patients with CHF also had a substantial decrease from 17.9% to 5.2% in the first and third decades, respectively. Patients with IHD, cancer, and liver failure all showed decrease in the mortality risk too. Overall adjusted odds ratio of UGIB mortality indicates that liver failure, CHF, renal failure and cancer are significant risk factors for UGIB. The decreasing trend of odds ratio for patients with CHF (P<0.001), IHD (P<0.02) and renal failure (P<0.001) were statistically significant in this period. In esophageal bleedings, there was an increase in the mortality risk for patients with renal failure, while other comorbidities had a decreased risk from the second to third decade. Mortality risk of gastric bleeding for patients with renal failure has had a dramatic change, starting with 37.5% in the first decade, and ending up 3.7% in the third decade. Mortality risk of patients with CHF had a significant decline from 15% in the first decade to 4.1% in the third decade. Other comorbidities did not show such significant changes in their mortality risk in this period. Duodenal bleeding mortality risk in patients with renal failure plummeted from 47.4% in the first decade to 3.4% in the third decade. CHF patients showed a significant decline in this period, with 20.7% to 8.4% in the first and third decades, respectively. Patients with liver failure, IHD and cancer did not show significant changes in the mortality risk in this period.

Conclusion: Critical care improvements in patients with comorbidities may have reduced mortality risks, particularly in renal and heart failure cases. These reductions are less in other studied comorbidities, which might be related to the pharmaceutical and procedural risks for causing UGIB. Despite reduction in the mortality risk, extra caution should be taken in the management of UGIB cases with the studied comorbidities due to higher risk of mortality in them.

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The Association between Diabetes Mellitus and Colorectal Cancer Stage at Presentation

Presidential Poster

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Purpose: It is well-described that diabetes mellitus type II (DM) is associated with increased risk of colorectal cancer (CRC), worse initial treatment response, and higher risk for recurrence, as compared to the general population. Yet, the higher mortality among patients with both CRC and diabetes is often not cancer-specific. Furthermore, the influence of diabetes on progression of colorectal neoplasia has been controversial, and the risk of presenting with advanced stages of CRC is not well-defined. Aim: To determine whether patients with DM type II are at increased risk for presenting with advanced stage colorectal cancer.

Methods: We performed a retrospective review of consecutive patients who were diagnosed with CRC between January 1996 and September 2002 at the John Cochran VA Medical Center. Pathological stages at diagnosis were compared using the TNM Classification of Malignant Tumors. Patient data including presence of DM, gender, race, age, body mass index (BMI), history of tobacco and alcohol use, screening or diagnostic colonoscopy at diagnosis, and location of CRC was collected. Logistic regression was used to evaluate the association between DM and cancer staging at presentation while adjusting for potential confounders.

Results: During the 6-year study period, a total of 251 subjects were diagnosed with CRC, of which 249 subjects met eligibility criteria. An additional 14 cases were eliminated from the analysis due to missing data. 63 subjects had a diagnosis of type 2 diabetes mellitus. There were no significant differences in gender (p=0.81), age at presentation (p=0.50), proportion of diagnostic colonoscopies performed (p=0.89), and proximal CRCs detected (p=0.74) between subjects with and without DM. However, BMI was significantly higher in those with DM (28.4 vs. 26.2; p=0.008), and tobacco use was significantly higher in those without DM (77.5% vs 62.9%; p=0.03). In the univariate analysis, subjects with DM were less likely to present with stage three or four disease (OR 0.39; 95% CI 0.19-0.79; p=0.01). This finding persisted after adjusting for age, sex, race, BMI, tobacco and alcohol (OR 0.43; 95% CI 0.19-0.96; p=0.04). Additionally, there was no significant difference between African Americans and Caucasians presenting with advanced stages of CRC (p=0.28).

Conclusion: Patients with DM, overall, have greater morbidity and mortality in the setting of CRC. We found that patients with DM were less likely to present with advanced stages of CRC, compared to non-diabetics. Thus, it is possible that the poor outcomes are more closely linked to underlying diabetes rather than stage of malignancy. Population-based and genetic studies are needed to further elucidate this association.

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Patient Assessments and Online Ratings of Quality Care: A "Wake-up Call" for Providers

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Purpose: Many physicians have been reluctant to embrace physician evaluation websites (PEWs) due to the overwhelming number of PEWs and concerns about negative anonymous feedback. This research provides a comprehensive analysis of 35 PEWs; providing information on general website characteristics, features of physician profiles (and ways in which they can be enhanced), the nature of reviews, demographics of PEW users, and data regarding the prominence of each site on the internet. This study identifies 11 noteworthy sites and provides rationale for their selection. Attention to these sites is likely to yield great returns for physicians concerned about their online reputations.

Methods: 35 out of 58 PEWs met criteria for inclusion in the analysis. Each site was studied to assess its geographic focus, features of physician profiles, nature of patient-generated reviews, number of monthly site visitors, and other data including user demographics and characteristics. Additional information was obtained by contacting the website administrators with a questionnaire. Notes were made of unique characteristics, number of visitors, and "doctor friendly" features for each website.

Results: Most PEWs provide their services free-of-charge to patients and to physicians. Anonymous posting of reviews is ubiquitous; however, most reviews are positive. A few websites allow physicians to respond publicly or privately to negative patient reviews. Most PEW users are female, have children, and have some college or a college degree. Of the 35 sites included in the analysis, 11 were identified as unique sites poised to make the biggest impact on healthcare. These sites were selected because of their large size (in number of unique visitors per month), rapid growth, or because they possess particularly "doctor friendly" features. They are: angieslist.com, docspot.com, drscore.com, findadoc.com, healthgrades.com, local.yahoo.com, ratemds.com, ucomparehealthcare.com, vitals.com, yourcity.md, and zocdoc.com. Physicians should consider creating profiles on each of these sites which can usually be done for free.

Conclusion: Physician evaluation websites have tremendous potential to help doctors and patients, but that potential remains largely untapped today. With this study as a guide, physicians can begin to collaborate with PEWs and harness their potential to improve practices and to attract new patients. As physicians increasingly interact with the most "doctor-friendly" PEWs, they are likely to motivate other websites to implement changes that give healthcare providers greater control over their online reputations. The era of physicians avoiding online evaluations is closing, and tomorrow, doctors who embrace PEWs are the most likely to succeed.

1561

Effect of Antithrombotic (AT) Medication on Blood Transfusions in Gastrointestinal Bleed (GIB) Patients in a Community Hospital Setting (CHS)

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Purpose: Blood transfusions are often required in patients who present with GI bleeding while concomitantly taking daily AT medications. The aim of this study was to illustrate, in the setting of an active GIB, which ATs among Acetylsalicylic Acid (ASA), Clopidogrel, Warfarin, Dabigatran and Non-ASA

[1558] UGIB mortality risk and adjusted odds ratio for different Rockall score comorbidities

	1979–1989			1990–1999			2000–2009			
	Mortality %	Crude OR	Adjusted OR[a]	Mortality %	Crude OR	Adjusted OR[b]	Mortality %	Crude OR	Adjusted OR[a]	P value for OR trend
Liver Failure	10.5	2.43 (1.60–3.70)	2.93 (1.88–4.55)	9.3	2.41 (1.89–3.07)	3.07 (2.37–3.99)	5.0	1.72 (1.29–2.30)	2.36 (1.73–3.22)	0.7
Heart failure	17.9	5.13 (3.94–6.68)	2.61 (1.97–3.46)	10.5	3.05 (2.56–3.63)	1.93 (1.60–2.33)	5.2	1.93 (1.59–2.35)	1.36 (1.11–1.67)	<0.001
IHD	7.6	1.83 (1.42–2.36)	1.22 (0.94–1.59)	4.5	1.06 (0.86–1.30)	0.87 (0.70–1.08)	2.9	0.94 (0.75–1.18)	0.82 (0.65–1.04)	0.020
Cancer	10.9	2.62 (1.92–3.57)	1.86 (1.35–2.57)	9.1	2.46 (2.02–2.98)	2.09 (1.71–2.56)	5.4	1.93 (1.55–2.42)	1.75 (1.39–2.20)	0.7
Renal Failure	50.0	21.12 (12.02–37.09)	17.42 (9.38–32.34)	19.2	5.30 (2.56–11.01)	3.20 (1.46–7.02)	4.0	1.33 (0.90–1.97)	1.20 (0.80–1.79)	<0.001

IHD: Ischemic Heart Disease.
[a]Adjusted for age and number of admission day.
[b]Adjusted for gender, age and number of admission day.

NSAIDs resulted in the greatest percentage of massive GI blood loss (defined as requiring ≥4 units of blood) in a CHS.
Methods: A retrospective chart review was performed for all GI bleed patients on daily AT medication who received a blood transfusion at a single medical center between June 1, 2011, and December 31, 2011. Subjects were eligible if they received ≥1 unit of packed RBC. GI bleeding was defined as hematemesis, hematochezia, or occult blood in the stool accompanying a decrease in hemoglobin confirmed by a gastroenterologist, who identified the site of bleeding by endoscopy. Medications were reviewed and recorded in a database. The data was assessed by determining the total number of cases requiring transfusion while on these medications, and then by calculating the frequency of massive GI bleeds among those cases and converting that frequency to a percentage.
Results: 10,843 patients were admitted to a CHS, of which 221 (2.04%), aged 67±16 years, had a GIB requiring transfusion. The source of the bleeding was found to be upper (57%), proximal to the ligament of Treitz, lower (30%), and obscure (12%), with 0.45% of cases having both an upper and lower bleed. Of the 221 patients, 68 on AT medication experienced massive GI bleeding. ASA had the greatest number of massive GIB. However, 71.4% of patients requiring transfusion while taking Clopidogrel experienced massive GI blood loss. The combination of ASA + Clopidogrel produced the largest single transfusion requirement (13 units).
Conclusion: In a CHS, although ASA produced the greatest total number of GIB requiring transfusion, a greater percentage of patients who required transfusion while taking Clopidogrel resulted in massive GI blood loss. These results suggest that certain AT medications, like Clopidogrel, are more likely to require large blood transfusions than others when a GI bleed occurs; however, a limitation of this study was the small sample size for each medication. Further studies with a larger number of cases may provide a more adequate comparison of AT medications effect on blood transfusion requirements when an active GIB is present.

1562

Barriers to Compliance to Gluten-free Diet in Celiac Disease: The Role of Depression and Motivation

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Purpose: Gluten-free diet (GFD) is the cornerstone of treatment in celiac disease (CD). Compliance to GFD is often compromised by psychosocial factors as well as emotional (e.g., depression, anxiety), cognitive (e.g., perceived competence), and interpersonal (quality of patient-physician relationship) characteristics. Drawing from a social psychological theory of motivation called Self Determination Theory (SDT) (Deci and Ryan, 1985, 1991), we assessed the relative magnitude of the relationship between these psychosocial processes and compliance to GFD in a sample of patients with CD.
Methods: Subjects included members of the Western New York Gluten-Free Diet Support Group who completed a testing battery, including the Celiac Dietary Adherence Test (CDAT), the Depression Anxiety Stress Scale (DASS), the Celiac Disease Quality of Life scale (CD-QOL), and the Celiac Symptom Index (CSI). The assessment also included SDT measures that were found to influence motivation in a range of chronic conditions. These variables included the Perceived Competence for CD Scale (PCS), measuring feelings of competence to comply with GFD, the Treatment Self-Regulation Questionnaire (TSRQ-CD), assessing autonomous versus controlled motivation, and the Health Care Climate Questionnaire (HCCQ-CD), measuring perceptions of physician autonomy supportiveness. Statistical analysis included Pearson correlations to measure linear relationships and hierarchical linear regression to determine predictors of non-compliance.
Results: Of 500 members who received questionnaires, 190 completed the questionnaires. We report data from the first 100 questionnaires. As hypothesized, there was a significant correlation between non-compliance and depression ($r=0.58$, $p<0.001$), and to a lesser extent to anxiety ($r=0.41$, $p<0.001$) and stress ($r=0.44$, $p<0.001$). Non-compliance also correlated strongly with reduced perceived competence ($r=-0.67$, $p<0.001$) and disease severity ($r=0.66$, $p< 0.001$). Moderate correlations were found between compliance and autonomous motivation ($r=-.43$, $p<0.001$) as well as quality of life ($r=0.46$, $p<0.001$). In the final model of the regression analysis, significant independent predictors of non-compliance were perceived competence ($\beta=-0.45$, $t=-0.4.90$, $p<0.001$) and depression ($\beta=0.28$, $t=2.80$, $p<0.01$).
Conclusion: Compliance to GFD in celiac patients is associated with psychological distress, particularly depression, as well as motivation factors including perceived competence and autonomous motivation. Non-compliance is associated with increased disease severity and reduced quality of life. These preliminary findings highlight barriers to compliance that, if addressed, can optimize the therapeutic value of GFD for this challenging disease.

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Rates of Minor Adverse Events and Health Resources Utilization Post-colonoscopy

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Purpose: Little is known about minor adverse events following outpatient colonoscopies and the few existing studies are limited by possible recall bias and outcome misclassification. The purpose of this study is to estimate prospectively the rate of minor adverse events at 2, 14, and 30 days after outpatient colonoscopies, and assess healthcare resources utilization resulting from minor adverse events.
Methods: A longitudinal cohort study with follow-ups at 2, 14, and 30 days was conducted among individuals having an outpatient colonoscopy at Montreal General Hospital. Consecutive individuals were interviewed by a research assistant prior to colonoscopy to obtain baseline characteristics (age, gender, comorbidities, use of antiplatelets/anticoagulants, prior symptoms). Endoscopy reports were consulted for the colonoscopy indication, colonoscopy findings, biopsies and polypectomies. Follow-up occurred by either phone interview or internet survey, according to the participant's choice; data collected included: minor adverse events (abdominal pain, bloating, diarrhea, constipation, nausea, vomiting, blood in the stools, rectal or anal pain, headaches, other) and health resources utilization (emergency department, primary care doctor, gastroenterologist, nurse, pharmacist, health hotline). Minor adverse event rates were estimated at each follow-up using a Bayesian hierarchical model accounting for physician clustering. Two sets of analyses were performed. In the first, we included all adverse events reported, and in the second, we excluded complaints that were present before the colonoscopy (based on the symptoms reported at the baseline interview).
Results: Of the 705 individuals approached, 421 (59.7%) were recruited. The minor adverse event rates at the two, 14 and 30 days follow-up were 25.8% (95% CI 12.5%, 43.5%), 13.9% (95% CI 5.2%, 25.9%), and 4.3 (95% CI 0.06%, 12.5%), respectively. After excluding complaints that were present before the colonoscopy, the minor adverse event rates at the 2, 14, and 30 days follow-up were 17.2% (95% CI 8.0%, 29.6%), 9.7% (95% CI 2.4%, 23.4%) and 3.1% (95% CI 0.08%,13.2%), respectively. There was little variation among physician specific rates. Overall health resources utilization for minor adverse events was low (1.8%).
Conclusion: Minor adverse events post-colonoscopy are common, occur mainly in the first two weeks and result in little use of health resources.

1564

Incidence of GI Bleed in Low versus High Killip Classes: A Single Center Study

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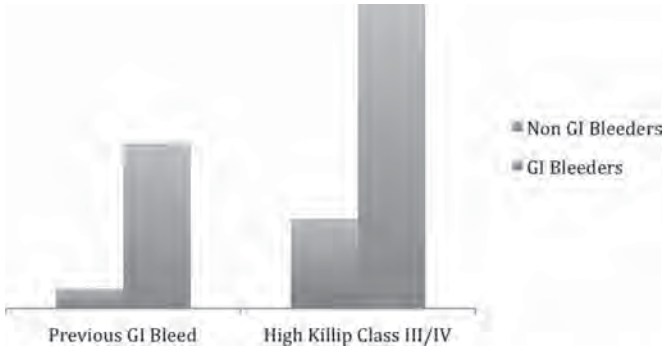
Purpose: Gastrointestinal bleeding is a hemorrhagic complication after percutaneous coronary intervention in patients with acute myocardial infarction. To determine predictors of gastrointestinal bleeding and the impact of gastrointestinal bleeding on outcomes in acute MI patients undergoing percutaneous coronary intervention.
Methods: It was a retrospective study based on chart review of the patients from August, 2010 to December, 2010, who underwent PCI for acute MI (5 STEMI and 79 NSTEMI). 84 patients (55 males and 29 females) with a mean age of 63.2 years were included in the study. Six patients developed gastrointestinal bleeding, yielding an incidence of 7.1%. All the patients in the study received dual anti-platelet therapy with anticoagulation. The differences in the clinical characteristics and medication in the patients with or without gastrointestinal bleeding were not significant.
Results: Univariate analysis demonstrates that patients with gastrointestinal bleeding had a significantly higher incidence of previous gastrointestinal bleeding (33% vs 4%, P<0.001), Killip class IV at presentation (61% vs 18%, P<0.001) and mechanical ventilator support (44% vs 12%, P<0.001, Figure 1). The prophylactic prescription of proton pump inhibitors (PPIs) did not appear to be protective against gastrointestinal bleeding in the present study (22% vs 13%, P=0.22). Gastrointestinal bleeding was associated with significantly prolonged stays in the intensive care unit (mean [SD], 5.4 [6.7] days vs 3.6 [3.6] days, P=0.04; but similar total hospital stays (8.8 [8.6] days vs 7.7 [5.6] days, P=0.43). The in-hospital mortality of patients with gastrointestinal bleeding was higher than the in-hospital mortality in patients without gastrointestinal bleeding (44% and 9%, P<0.001).
Conclusion: Although rare, gastrointestinal bleeding in patients with MI significantly prolongs intensive care unit stay and increases mortality. Previous gastrointestinal bleeding and higher Killip class are associated with higher incidence of gastrointestinal bleeding.



[1564] Incidence of GI bleed in low versus High Killip classes.

1565

Intravenous Proton Pump Inhibitor Orders Can Be Decreased with an Electronic Alert

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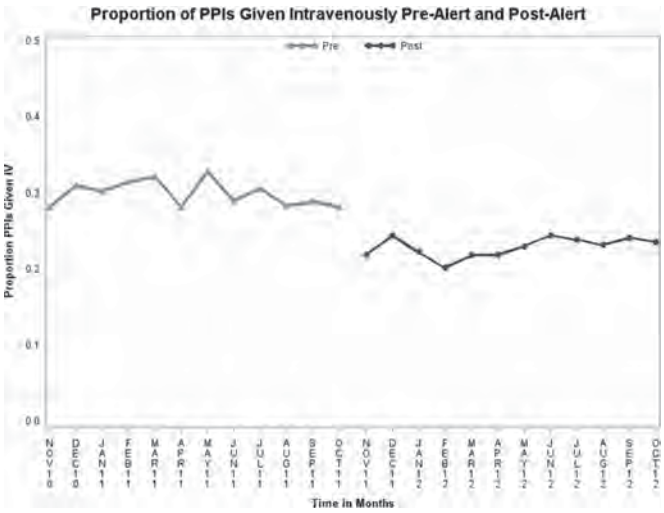
Purpose: Proton pump inhibitors (PPIs) are highly effective via oral or intravenous (IV) routes. Intravenous PPIs are indicated for acute gastrointestinal hemorrhage and inability to take oral medications, but are widely overused. Electronic order alerts can alter prescribing behavior, yet their effectiveness in decreasing IV PPI orders is unknown. Therefore, we conducted a retrospective study of an electronic alert for IV PPI orders.

Methods: On October 21, 2011, our institution introduced an electronic alert that provides information on IV versus oral orders for PPIs. The alert is a pop-up box informing the provider that oral PPIs cost one tenth as much as IV PPIs yet are equally bioavailable; it appears when a provider initiates an order for an IV PPI. We retrieved all PPI orders for adult inpatients from one year before the alert (pre-alert) until one year after the alert (post-alert), excluding PPIs via continuous infusion which do not trigger the alert. We parsed electronic medical records for variables related to the PPI order, the prescriber, and the patient including diet. Our primary outcome was a difference in the proportion of all completed PPI orders that were intravenous pre-alert compared to post-alert. Multivariable logistic regression modeling was used to test predictors for overriding the alert.

Results: During two years centered on October 21, 2011 there were 65,893 completed orders for PPIs including 17,297 (26.3%) completed IV PPI orders. During the year post-alert, 815 (10.1%) IV PPI order attempts were not completed after triggering of the alert. Among all PPI orders, the proportion of IV PPI orders significantly decreased from pre-alert to post-alert (30.0 vs 25.6% respectively, chi-squared p<0.01). Post-alert, significant predictors for overriding the alert were non-physician prescriber (physician assistants and nurse practitioners, OR 1.47, 95% CI 1.27-1.88) and whether the order for the IV PPI was part of an order set (OR 1.48, 95% CI 1.22-1.79).

Conclusion: An electronic alert for IV PPI orders effectively decreased the proportion of PPIs ordered intravenously, although 90% of alerts were overridden. Significant predictors for overriding the alert were non-physician prescribers and whether the IV PPI order was part of an order set.



[1565]

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Identifying and Prophylaxis of High-risk GI Bleeders in Cardiac Patients

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Purpose: Identification of individuals at risk for gastrointestinal bleeding is extremely important because it is associated with increased mortality and morbidity. Risk factors associated with GI bleeding have been identified as age >64, hx of peptic ulcer disease, *H. pylori* infection, dyspepsia or GERD symptoms, chronic renal failure, diabetes mellitus, and concomitant use of other antiplatelet agents, anticoagulants, nonsteroidal anti-inflammatory drugs, and steroids. Recommendations made in 2010 ACC/ACG/AHA expert consensus recommend GI prophylaxis for all patients undergoing percutaneous coronary intervention (PCI) who are at high risk of adverse GI event consequent to therapy. Our purpose is to emphasize the importance of GI bleeding risk stratification and prophylaxis in patients prior to antithrombotic therapy in PCI.

Methods: Retrospective study on 200 patients admitted to Plaza Medical Center in Fort Worth, TX, for percutaneous cardiac intervention requiring antithrombotic therapy from June 2010 to June 2011. We examined cardiology consults and identified risk factors for GI bleeding reported in past medical history, medications and review of systems. Next set of data was based on whether patients with three or more risk factors were appropriately placed on GI prophylaxis with a proton pump inhibitor.

Results: Gastrointestinal risk factors were identified in PMH and medications. In ROS, no consults included pertinent positives or negatives regarding previous PUD, dyspepsia, reflux or bloatiness. Patients with or without risk factors were placed on pepcid. Patients with protonix on their medication lists were switched to pepcid. As a result, no one was appropriately placed on a proton pump inhibitor for prophylaxis.

Conclusion: Gastrointestinal bleed is a common medical condition resulting in high medical care costs. There are many ways to improve the identification of patients at risk. Efforts should be aimed at increasing the awareness and promoting adequate history taking with emphasis on past medical history, medication list and review of systems. High-risk patients should be appropriately placed on GI prophylaxis with a proton pump inhibitor.

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Phase III, Randomized, Placebo-controlled Evaluation of Ferumoxytol Treatment for Iron Deficiency Anemia in Patients Who Have a History of Unsatisfactory Oral Iron Therapy: Fatigue and Health-related Quality of Life in Patients with Gastrointestinal Disorders

Presidential Poster

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Purpose: Iron is essential for the function of key proteins including hemoglobin (Hgb) and myoglobin, cytochromes, various enzymes, and for immune function. Iron deficiency can, therefore, negatively impact patients' health-related quality of life (HRQL). Iron deficiency anemia (IDA) is common in patients with gastrointestinal (GI) disease due to multiple factors, such as blood loss, inflammation and malabsorption. Although oral iron is the preferred first-line treatment, many patients cannot take it, do not tolerate it, or do not adequately respond; many of these patients, therefore, live with chronic anemia and related negative effects on their HRQL. Ferumoxytol (FER) is an IV iron indicated for the treatment of IDA in adults with chronic kidney disease. To explore the impact of FER treatment on patient reported outcomes in IDA patients who have a history of unsatisfactory oral iron therapy or in whom oral iron cannot be used, this randomized, placebo-controlled, double-blinded, Phase 3 study included: Functional Assessment of Chronic Illness Therapy-Fatigue Scale (FACIT-Fatigue), SF-36, and LASA.

Methods: Patients with Hgb <10 and >7 g/dL, and TSAT <20% were randomized 3:1 to either 2 injections of 510 mg of FER 5±3 days apart or normal saline (placebo). FACIT-Fatigue, SF-36 and LASA domains were assessed at baseline and weekly up to Week 5. This is a post-hoc analysis of the pre-specified subgroup of 231 patients whose underlying cause of IDA was GI disorders.

Results: Baseline FACIT-Fatigue scores (22.4 ±11.7) were lower than general US population norms (40.1), and comparable to anemic cancer patients receiving chemotherapy (23.9). Baseline SF-36 Domain and Summary scores were also below general population norms (50). By Week 5, in parallel with a robust increase in Hgb, FER-treated patients demonstrated significantly greater improvements in FACIT-Fatigue scores than placebo, approaching general population norms, and significantly greater improvements than placebo in 9 of the 10 SF-36 Domain and Summary scores (p< 0.05). Improvements in LASA domains were similar to the overall IDA population.

Conclusion: This analysis found that patients with IDA due to GI disorders, who had been unsuccessfully treated with oral iron, had very poor baseline HRQOL scores. In this study, treatment with FER resulted not only in increased Hgb, but also in significant improvements in measures of health-related quality of life.

Disclosure - Naomi Dahl, William Strauss, Gloria Lau, Kristine Bernard - Employees: AMAG Pharmaceuticals; Kendra DeBusk -Employee: Oxford Outcomes Charles Barish - None David Ford - Speaker's Bureau: Takeda.

This research was supported by an industry grant from AMAG Pharmaceuticals.

[1567]

	Ferumoxytol N=173		Placebo N=58		
	Baseline Mean±SD	Change to Week 5	Baseline Mean±SD	Change to Week 5	Treatment Difference (95% CI)
Hgb, g/dL	8.9±0.9	2.8	8.7±0.7	−0.1	2.9 (2.5, 3.3)
FACIT-Fatigue	22.4±11.7	11.1	22.1±11.4	7.5	3.6 (0.3, 6.9)
SF-36 Vitality	35.1±10.8	9.7	37.0±11.4	3.9	5.8 (2.5, 9.1)
LASA Energy	33.7±20.3	16.8	33.2±22.2	10.0	6.8 (−1.0, 14.6)

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Participant Preference for Email Follow-up Associated with Adherence to Follow-up: Results of a Longitudinal Study of Minor Adverse Events Post-colonoscopy

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Purpose: Patient adherence to follow-up in a longitudinal study can be problematic. The purpose of this study was to determine the relationship between patient characteristics and adherence to follow-up among individuals who consented to participate in a study of minor adverse events following colonoscopy.

Methods: A longitudinal study with follow ups at 2, 14, and 30 days was conducted of individuals (aged 40-75) undergoing colonoscopy at one outpatient endoscopy clinic in Montreal, Canada. Recruitment occurred in the endoscopy waiting area prior to colonoscopy. Baseline data included age, sex, recent symptoms (abdominal pain, bloating, nausea/vomiting, diarrhea, constipation, blood in the stools, anal/rectal pain, headache, other), comorbidity (diabetes, heart disease, lung disease, kidney disease, neurological condition, inflammatory bowel disease), regular use of medication (aspirin, clopidogrel, warfarin, dabigantran, ticagrelor, prasugrel, NSAIDs), and preferred method of follow-up (telephone, email). Adherence to all follows-up was dichotomous and defined as completing the day 2, 14, and 30 follow-ups. Multivariate logistic regression was used to determine the factors related to adherence to all follow-ups.
Results: Of 682 eligible individuals, 421 (61.7%) consented to participate (mean age=58.4, 45.1% female). Of these participants, 238 (56.5%) had recent symptoms, 95 (22.6%) had at least one comorbidity, and 90 (21.4%) reported regular medication use. Response rates for the day 2, 14 and 30 follow-ups were 82.7%, 80.8% and 74.8%, respectively, and 64.5% of participants responded to all three follow-ups. Multivariable analysis showed that females (OR 2.15, 95% CI 1.42-3.28) and email follow-up preference (OR 1.68, 95% CI 1. 90-2.58) were associated with adherence to all follow-ups, while age, comorbidity and regular medication use were not.
Conclusion: Females and email follow-up preference were significant predictors of adherence to all follow-ups. Further research is required to determine whether giving participants their preferred method of follow-up or the email method of follow-up was associated with adherence.

1569

Surgical Outcomes in Colorectal Cancer Patients: Colorectal versus Non-colorectal Surgeons

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Purpose: Colorectal Cancer is the third most commonly diagnosed cancer. Surgery is the only curative therapy especially for localized disease. Despite many recent advances in surgical techniques, complications like infection, bleeding, recurrence continue to occur in post-operative period. There is very little data available comparing surgical outcomes in these patients when operated by colorectal surgery group (physicians who hold specialization in field of colon, rectal and anal disorders) as compared to non-colorectal surgery group.
Methods: Thirty patients operated for colorectal carcinoma at our center in last five years were enrolled in the study. Patients were divided into two groups, Group 1 (47%) included patients operated by colorectal surgery group and group 2 (53%) included patients operated by non-colorectal surgery group. There was no significant difference in demographics such as age, sex, race, pre-operative BMI as well as TNM cancer staging between two groups. Surgical outcomes for both groups were compared for duration of surgery, amount of blood loss during surgery, duration of postoperative analgesia and length of postoperative hospital stay.
Results: There was no statistical difference in type of surgeries (e.g., hemi colectomy, total proctocolectomy, etc.) done by both groups. Average duration of surgery for group 1 patients was 2.59 hours as compared to 4.13 hours in group 2. (p=0.11). Average blood loss during surgery was 2.37 dl in group 1 as compared to 2.76 dl in group 2 (p=0.76). The ratio of Non-SILS: SILS was 1.40 in group 1 as compared to 6.67 in group 2 (p=0.09). Average length of post-operative hospital stay was 7.2 days for group 1 as compared to 10.3 days in group 2 (p=0.21). Duration of post-operative analgesia (narcotics) was 1.98 months in group 1 as compared to 2.8 months in group 2 (0.56). The overall rate of post-operative complication (such as infection, bleeding, recurrence, death) was 36% in group 1 as opposed to 56% in group 2 (p=0.26).
Conclusion: The colorectal cancer patients operated by colorectal surgeons have better operative and post-operative outcomes than patients operated by non-colorectal surgery group. Though there were no statistically significant differences between these two groups, it could be explained by low number of subjects enrolled in this study. Further analysis of the observed differences leads us to believe that 6 more patients in each arm would result in statistically significant findings.

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Race and Nonalcoholic Fatty Liver Disease in Veterans: Surprising Discovery of a Retrospective Analysis

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Purpose: Vitamin D deficiency is more prevalent among African Americans than other Americans due to pigmentation reducing vitamin D production in the skin and poor median vitamin D intakes of American blacks. Even though African Americans have high prevalence of vitamin D deficiency and risk factors associated with nonalcoholic fatty liver disease (NAFLD), there is a scant documentation of NAFLD among blacks.There is a low prevalence of NAFLD in Nigerians of 8.7% as compared to other geographic areas in the U.S., Russia, and Japan. In this study, we explore the prevalence of vitamin D deficiency and NAFLD among racial groups. Additionally we studied relation of obesity with NAFLD.
Methods: A retrospective review of electronic medical records of patients with a diagnosis of NAFLD at Veterans Affairs Medical facilities in the Southeastern United States was conducted. Those with one serum 25(OH) vitamin D level between 2001-2008 were included and monitoring of 25(OH)D over three subsequent years was noted. Initial and follow-up vitamin D values along with liver function and patient demographics were recorded.
Results: 376 veterans with NAFLD and an available 25(OH) vitamin D level were noted of which 44% had abnormal liver enzymes. Blacks were significantly more likely to be vitamin D deficient than Whites (75.8% vs 43.3%, χ^2=12.9, p=.002). Minorities were more likely to have abnormal liver enzymes than non-minorities. Also noted that minorities with abnormal liver enzymes were more likely to be vitamin D deficient. Obesity was unrelated to vitamin D or liver enzyme status.
Conclusion: Our study revealed surprising results as compared to previous studies regarding prevalence of NAFLD in African Americans. Minorities in our study has increased prevalence of NAFLD along with high rate of vitamin D deficiency. Prior studies have indicated underrepresentation and under-referral of African Americans among biopsy proven NAFLD. Documented genetic correlation of vitamin D deficiency in blacks prompt us to think that low prevalence of NAFLD in the same population despite of risk factors might have a genetic predisposition, yet pending for us to discover. Our study group showed obesity was not linked to fatty liver disease which could be due to dietary, hereditary and demographic factors. The studied group belongs to veterans who live in the Southeastern United States, where people get more sun exposure than individuals in Northern states. This could be associated with higher vitamin D levels, thus less inflammation in the liver. More population based studies are needed to further evaluate observed racial difference in the prevalence of NAFLD. In the meantime, our study provide yet another reason to focus on treatment and monitoring of vitamin D status in minorities.

1571

Gender Differences in Healthcare Utilization among Long-term Users of Proton Pump Inhibitors

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Purpose: Female gender is associated with increased severity and frequency of gastroesophageal reflux disease (GERD) symptoms. This is associated with lower health-related quality of life and increased healthcare utilization. We examined gender differences in healthcare utilization among long term users of proton pump inhibitors (PPI) at a Veterans Affairs (VA) health system.
Methods: Subjects with receipt of ≥120 units (tablets or capsules) of any PPI in a 12-month period (July 1, 2008-June 30, 2009) were considered long-term users. Receipt of non-formulary PPI, concomitant histamine-2 receptor antagonist (H2RA) and PPI and esophagogastroduodenoscopy (EGD) were considered markers of increased healthcare utilization. Subjects received costlier non-formulary PPI (esomeprazole, lansoprazole, rabeprazole, pantoprazole) if they failed the formulary PPI (omeprazole) and received pharmacy approval. We collected demographic data on long term PPI users and compared males and females based on the use of non-formulary PPI, concomitant PPI and H2RA, and EGD. Record of receipt of non-formulary PPI and concomitant use of H2RA was obtained from pharmacy records. Receipt of EGD was extracted from the medical records using the Current Procedural Terminology (CPT) codes for EGD. Descriptive, chi-square, and logistic regression analyses were done.
Results: Long term users were 10,483 (76% of all PPI users in the study period). The mean age was 67±13 years; 94% were males. Ethnicity was documented in only 3,647. Whites were 76%. Receipts of EGD, concomitant PPI and H2RA and non-formulary PPI were documented in 23.9%, 5.5% and 9.7% of long term PPI users, respectively. Female long-term users had more markers of increased healthcare utilization (30.5% versus 23.5% had EGD, 9.7% versus 5.2% used both PPI and H2RA, 32.7% versus 8.3% used non-formulary PPI; each with P<0.0001). Multiple logic regression analysis showed that female long-term users were significantly more likely to use both PPI and H2RA (OR 1.519, 95% confidence interval [CI] 1.127-2.047, P=0.006), and non-formulary PPI (OR 5.105, 95% CI 4.228-6.164, P<0.001).
Conclusion: In the veteran population, female gender was associated with increased healthcare utilization among long term users of PPI.

1572

Association of Vitamin D Deficiency to Liver Enzyme Status in Nonalcoholic Fatty Liver Disease in Veterans: A Retrospective Analysis

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Purpose: Vitamin D is a lipophilic molecule with anti-inflammatory, antifibrotic, immunomodulatory effects. Prior studies indicate a high prevalence of vitamin D deficiency in patients with nonalcoholic fatty liver disease (NAFLD). NAFLD is now considered a hepatic component of the metabolic syndrome and increases the risk of cardiovascular disease. The prevalence of NAFLD is observed in 20-30% of general population.In this study, we explore the relationship and extent of vitamin D deficiency to normal and abnormal liver enzymes among veterans with NAFLD and assess improvement in liver enzyme status with vitamin D supplementation.
Methods: A retrospective review of electronic medical records of patients with a diagnosis of NAFLD at Veterans Affairs Medical facilities in the Southeastern United States was conducted. Those with one serum 25(OH) vitamin D level drawn between 2001-2008 were included and monitoring of 25(OH)D level over three subsequent years was noted. Patient demographic, initial and follow-up vitamin D values along with liver function were recorded. Vitamin D deficiency was defined as a value less than 20 ng/ml. The normal values for AST and ALT were less than 40 units and alkaline phosphatase 44-147 units/L. Vitamin D supplementation with ergocalciferol or cholecalciferol was also noted.
Results: There were 376 veterans with NAFLD and an available 25(OH) vitamin D level. 44% had abnormal liver enzymes. Patients with abnormal liver enzymes were 53% more likely to be vitamin D deficient. Liver enzymes status did predict compliance vitamin D monitoring among study patients. Supplementation with any type of vitamin D was not associated with improvement in liver enzymes.

[1572] Liver enzyme status and vitamin D variables

Characteristics	NAFLD with normal liver enzymes (N=210)	NAFLD with abnormal liver enzymes (N=166)	t/x2	P
Initial level (25(OH)D)a	25.4	22.1	2.25	0.025
Initial Status (% deficient)	36.7%	56%	14.03	<0.001
Follow up level (25(OH)D)a	30.9	29.9	0.46	0.645
Follow *P* status (% deficient)	20.7%	30.9%	2.59	0.107
Vitamin D retested	66.7%	41.0%	24.8	<0.001

a=vitamin d value in ng/ml

[1572]

Vitamin D variable	Improvement in function	No improvement in function	t/x2	P
Initial Level (α)	25.1	24.3	0.18	0.857
Initial Status (% replete)	57.9%	50.0%	0.31	0.579
First follow up Level (α)	28.8	33.6	1.04	0.305
First follow up status (% replete)	65.8%	77.8%	0.83	0.362
Eventually replete (%)	97.4%	94.4%	0.50	0.77

α=vitamin D value in ng/ml

Conclusion: Our data suggest that veterans with abnormal liver enzymes are more likely to be vitamin D deficient. Vitamin D deficiency could be due to impaired liver 25-hydroxylation that is a manifestation of disease severity. Vitamin D is implicated in insulin resistance that contributes to NAFLD. Vitamin D supplementation did not improve liver enzymes which could be due to need for robust replacement with vitamin D, patient non compliance for follow up. Increasing hepatocyte damage in NAFLD leads to decreased expression of VDR for any replaced vitamin D level to provide positive effect on liver enzyme values.Vitamin D3 appears to be approximately 87% more potent in raising and maintaining a sustained serum 25(OH)D level than D2. In our study, ergocalciferol was used to a little more extent than cholecalciferol.The lack of improvement in liver enzymes could also be explained by inability of ergocalciferol to maintain an adequate serum vitamin D level.

1573

HCV Triple Therapy, The Non-study Experience: A Single Center Analysis Comparing African American to White Americans

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Purpose: To evaluate qualitative and quantitative differences between African Americans and White Americans in the treatment of HCV in a non-study based setting; the real world experience.
Methods: A retrospective case study analysis at a single center that evaluated the efficacy of triple HCV therapy in non study setting. Clinical response and quantitative laboratory values were compared between African-American and non African-American patients throughout the duration of treatment. Patients were included if they started triple therapy treatment after July 2011 and are not a part of any other clinical/pharmaceutical trials.
Results: African-Americans were found to have significantly higher BMI and HCV RNA quantitative viral loads at initiation of treatment with triple therapy (either boceprevir or telaprevir; Table 1). Throughout the course of treatment, African Americans had a greater percentage decrease in their baseline hemoglobin and platelet count, and a corresponding reduction in their baseline ribavirin dose. However, treatment outcomes (defined as virus negative at the conclusion of treatment) were not found to be statistically significant between African American and White Americans. A subset analysis (Table 2) revealed that patients who were virus negative at the end of treatment (either telaprevir or boceprevir) were less likely to have received blood transfusions throughout the duration of treatment.
Conclusion: Treatment dosages of ribavirin are based upon a patients weight, which corresponds with BMI. Higher doses of ribavirin are more likely to cause cytopenia compared to smaller doses of ribavirin. As a result, patients with higher BMI are more likely to have decreased hemoglobin and platelet counts. In the event a patient develops severe cytopenia, blood transfusion may be necessary. As evidenced in this study, blood transfusion was statistically significant in treatment outcomes - if a patient requires blood transfusions, they are less likely to complete treatment and achieve virus negativity. Larger studies, with greater power, are needed in order to explore other prognostic indicators in the treatment of chronic HCV.

[1573] HCV triple therapy—African vs white Americans

	White American	N	African American	n	Significance
BMI	28.7	18	34.2	12	0.041
IL28B CC genotype	31%	5/16	11%	1/9	0.035
IL28B CT genotype	63%	10/16	44%	4/9	0.035
IL28B TT genotype	6%	1/16	44%	4/9	0.035
HCV RNA Quant baseline (copies)	1826950	18	3879149	12	0.023
Starting RBV dose (mg)	888	18	1083	12	0.041
Starting PEG dose (mcg)	161	18	175	12	0.243
Lowest RBV dose (mg)	711	18	833	12	0.374
Lowest PEG dose (mcg)	146	18	164	12	0.269
Need RBV reduction - yes	50%	9/18	50%	6/12	1.0
Need PEG reduction - yes	28%	5/18	17%	2/12	0.498
RBV reduced to <600	44%	8/18	42%	5/12	0.885
Needed blood transfusion—yes	0%	0/18	17%	2/12	0.077
Virus negative at treatment completion	78%	14/18	75%	9/12	0.866
PI type—% telaprevir	56%	10/18	42%	5/12	0.473
Hgb reduction from wk 0 to wk 24	24%	18	19%	12	0.036
Plt reduction from wk 0 to wk 24	34%	18	39%	12	0.010

[1573] Treatment outcomes

	Not Virus negative at treatment completion	Virus negative at treatment completion	Significance
% White American	17%	83%	0.591
% African American	25%	75%	0.591
Has cirrhosis	50%	10%	0.029
Needed blood transfusion	33%	0%	0.002
IL 28B Genotype—CC	0%	100%	0.014
IL 28B Genotype—CT	17%	83%	0.014
IL 28B Genotype—TT	60%	40%	0.014

1574

Does the Presence of Melanosis Coli Interfere with Polyp Detection? A Retrospective Controlled Study

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Purpose: Melanosis coli (MC), a condition characterized by a change in the pigmentation of the colonic mucosa is routinely observed during colonoscopy. Historically, it has been correlated with the long term use of anthraquinone laxatives. More recently these compounds have become common ingredients in herbal medications and colon cleansers. There is limited data on the impact of the presence of melanosis coli on polyp detection rates (PDR). In this study, we looked at the impact of this condition on PDR, adenoma detection rate (ADR) and advanced adenoma detection rate (AaDR).
Methods: Retrospective review of patients with MC who had colonoscopy at a community hospital in downtown Brooklyn between January 2008 and January 2011. The control group was chosen at a ratio of 2:1 from consecutive patients negative for MC who had colonoscopy over a two month period. Data on demographics, colonoscopy and biopsy findings and medication were collected. SAS statistical software was used for analysis.
Results: Our study cohort included 111 cases and 222 controls. Study group had 30% males, 58% African American (AA), 36% Hispanic (H) while the control group had 35% males, 62% AA and 27% H. 20% of the cases had moderate to severe MC. There was no significant difference in laxative intake between study group and controls or within the control group. BMI for patients with MC was 33.8 in comparison to 29.8 in controls (P=0.006). Within the MC group, patients were 28.83% overweight and 51.35% obese. The mean age for MC group was 54.6 versus 61.1 for controls (P=0.0001). There was no significant association found between MC and race. On a multivariate analysis, after controlling for bowel preparation, there was no significant difference in ADR and AaDR between

patients with MC and controls (P=0.08). However, AaDR was higher in mild MC in comparison to moderate to severe MC (3% versus 6%, P=0.001).
Conclusion: This study did not demonstrate statistically significant differences in ADR and AaDR between the study group and control group. Interestingly, within the study group AaDR detection rate was significantly lower in moderate to severe MC versus mild MC. The study group who had melanosis coli did not have a history of laxative use which were higher than the control group. This raises the possibility that the public may be unaware of the anthraquinone compounds they are ingesting in herbal products and colon cleansers.

1575

Pilot Implementation of a New Quality Assessment Tool in Bowel Preparations: Initial Results with a New Prep

Presidential Poster

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Purpose: A significant barrier to patient acceptance of colonoscopy is the pre-procedure requirement for bowel preparation. As a result, there are currently many available bowel preps and few randomized trials to guide prep selection for patients and providers. There are no validated patient satisfaction questionnaires currently available. We therefore created a new quality assessment tool with both a new patient and new provider satisfaction scale (incorporating the valided Boston Bowel Preparation Scale - BBPS) that can be used in individual practices to allow assessment of new preps.
Methods: Average-risk patients undergoing screening colonoscopies at a single ambulatory procedure center were asked to fill out a survey assessment tool after completing their bowel preparation. The survey addressed eight areas regarding patient and provider assessment of the bowel preparation experience and outcome (Table 1). The assessment tool was also used to evaluate a novel prep, Badger Prep, which is PEG-3350 and electrolytes prepared by mixing the powder with 32-oz clear liquid in two containers. After the first 32-oz container is consumed, patients then drink 32 oz of any clear liquid of their choice. The process is repeated once more such that a total of one gallon is consumed over several hours. The endoscopists were asked to grade the quality of the preps using a global assessment (0 = extremely unsatisfied to 5 = extremely satisfied) and the BBPS.
Results: 202 (64 Badger Prep, 128 other prep) average-risk patients (mean age 56, 44% male) were included. Although there was a statistically significant preference for the flavor of other preps as compared to Badger Prep, it took less time to finish Badger Prep when compared to the rest. No statistically significant difference was noted in prep volume, tolerance, prior experience, recommendation to others, or physician/endoscopist satisfaction using either the global assessment or BBPS (Table 1).
Conclusion: 1) The assessment tool allowed us to evaluate Badger Prep, which was comparable to other preps across several categories and demonstrated a statistically significant reduction in the time to complete the prep. 2) The novel tool is a good measure of both patient and provider satisfaction and would be useful in practice quality assurance programs.

[1575]

Survey Parameter	Badger Prep	Other Prep	P-value
Prep flavor (0-terrible, 1-very bad, 2-bad, 3-okay, neither bad nor good, 4-good, 5-very good)	2.2±0.11	2.5±0.07	0.04
Prep volume (1-far too much, 2-too much, 3-neither too much nor too little, 4-too little, 5-far too little)	2.47±0.08	2.47±0.06	0.99
Tolerance of prep (0-not at all, 1-very poor, 2-poor, 3-okay, 4-well, 5-very well)	3.12±0.09	3.24±0.07	0.33
Time to finish prep (hours)	2.6±0.21	3.4±0.20	0.03
Would recommend prep to others (%)	70	79	0.21
Previous prep experience (%)	39	28	0.14
Physician satisfaction with prep quality (0-extremely unsatisfied, 1-very unsatisfied, 2-unsatisfied, 3-satisfied, 4-very satisfied, 5-extremely satisfied)	3.5±0.11	3.6±0.08	0.77
Prep quality using the Boston Bowel Preparation Scale (0-9)	7.2±0.22	7.1±0.16	0.63

1576

A Pay for Performance (P4P) Program Changes Physician Recommendations for Colonoscopy Follow-up Intervals

Presidential Poster

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Purpose: To evaluate the effect of a P4P program on physician compliance with national benchmarks on recommended colonoscopy follow-up intervals.
Methods: Practice data on adenoma detection rate (ADR) and recommended follow-up colonoscopy intervals for (a) normal risk patients with normal screening colonoscopies and (b) screening colonoscopy patients with <3 non-high risk colon adenomas was uploaded to GIQuIC for analysis. The GIQuIC data base which included 100,000 cases at the initiation of this study, documented national physician compliance with the 10 year follow-up recommendation for normal screening colonoscopies as 64% and compliance with the recommended five year interval in patients with <3 non-high risk adenomas as 57%. A P4P program contract between a physician group of 10 gastroenterologists performing endoscopic procedures in ASCs was established with a major 3rd party payer. Contract terms included an increase in total payments if the ADR at least equaled national values (25% males; 15% females; 20% combined) and the recommended colonoscopy follow-up intervals exceeded GIQuIC norm intervals in the two categories by 5 and 3% respectively. Data for two completed quarters was analyzed.
Results: During the first 3 months of GIQuIC monitoring, ADR rates were 39% for males and 39% for females. Follow-up interval recommendation for patients with normal screening colons was 10 years in 77%. For patients with <3 non-high risk adenomas, follow-up interval recommendation of 5 years was 57%. After continued physician education including sharing individual physician follow-up interval data and information about the financial reward providing national norms were exceeded, the second 3 months of monitoring showed ADR of 35% in males and 28% in females, a 10-year interval for normal screening colons of 73% and for screening patients with <3 non-high risk adenomas, recommended follow-up of 5 years or more was 69% (Table 1).
Conclusion: The initial phase of a P4P program in a private GI practice resulted in improved physician compliance with national colonoscopy follow-up recommendations in screening patients with normal findings and in those with <3 non-high risk adenomas.

1577

A Pilot Study to Assess the Impact of Structured Diet and Exercise Counseling on Obesity and Quality of Life Measures in South Carolina

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Purpose: Obesity is a pervasive problem in the U.S., especially in South Carolina, with 33.9% of the population overweight and 32.6% obese. Obesity is associated with a poor quality of life (QOL), as shown by the Medical Outcomes Study Short Form (SF questionnaires). Medicare and Medicaid proposed intensive counseling for all its patients with a body mass index (BMI) over 30kg/m^2 in September 2011. Obesity counseling has been used as a Physician Quality Reporting System measure. This study aimed to assess whether structured counseling on healthy diet and exercise choices in patients with a body mass index (BMI) over 25kg/m^2 had an impact on their QOL, understanding the benefits of healthy diet and exercise choices (DAEC) and BMI.
Methods: In this prospective pilot study, 104 patients were recruited at a gastroenterology center in South Carolina. At the initial consultation, their QOL and knowledge of DAEC were assessed using the SF-12, and a structured 'diet and exercise' questionnaire (DAEQ). Their BMI was recorded, and categorized according to the World Health Organisation International Classification of Weight According to BMI (Overweight, Obese class I, II or III). They were counseled for 40 minutes on portion sizes, healthy meal choices and the importance of regular exercise. They were shown how to measure serving sizes. Their comprehension was verified by information recall. Written guidelines were supplied, reinforcing this information. These directives were based on guidance from the American Heart Association and Centre for Nutrition Policy and Promotion. The follow-up period was two months, in which patients received two phone calls to monitor their progress, SF-12 and DAEQ scores, and BMI.
Results: Obesity class I patients underwent a significant improvement in mean mental health and DAEQ scores. Obesity class II patients experienced significant improvements in mean BMI and mean physical health scores. There were significant improvements in obesity class III patients' mean BMI and mental health scores. Overweight patients demonstrated improvement in all aspects of the SF-12, DAEQ scores, and reduction in BMI. The results before and after structured counseling are summarized in the 'Summary of Results' table.
Conclusion: This study highlights the benefits of regular counseling, even within a short period, as an intervention for obesity management. With further follow-up, there is potential for greater

[1576] Table 1. Impact of a P4P program on recommended colonoscopy follow-up intervals compared to national guidelines

	GIQuIC baseline value (1st 100–000 cases)—compliance with national recommendations	GIA contract goal—compliance with national recommendations	GIA with GIQuIC 1st 3 mos—compliance with national recommendations	GIA with GIQuIC 2nd 3 mos—compliance with national recommendations
Normal Scr Colon, Av risk, 10 yr f/u	64%	69%	77%	73%
<3 adenoma, non-high risk, Scr Colon, 5 yr f/u	57%	60%	57%	69%
Adenoma Detection Rate		M: >25% F: >15% combined >20%	M=39% F=39% combined=39%	M: 35% F: 28% combined 31%

[1577] Summary of results

	Mean (SD) PCS-12		Mean (SD) MCS-12		Mean (SD) DAEQ Score		Mean (SD) BMI (kg/m^2)	
	Before	After	Before <b/>	After	Before	After	Before	After
Overweight (*n*=20)	41.98 (10.48)	44.02 (10.40)	49.37 (10.32)	51.72 (9.75)	9.15 (4.02)	10.10 (4.41)	28.26 (1.30)	27.94 (1.47)
Obese Class I (*n*=35)	43.48 (9.46)	42.77 (11.09)	49.23 (10.46)	52.61 (9.00) **	8.63 (3.16)	8.86 (2.95)	32.42 (1.43)	32.54 (2.61)
Obese Class II (*n*=24)	40.72 (11.18)	43.79 (10.53) **	54.53 (7.85)	47.12 (9.22)	9.71 (3.77)	9.04 (4.05)	37.10 (1.42)	36.45 (1.87) **
Obese Class III (*n*=25)	36.42 (8.36)	36.38 (10.15)	46.92 (9.78)	48.82 (10.90)	11.50 (0.36)	8.54 (0.30)	44.71 (4.45)	43.49 (5.72) *

The Student's T-Test was used to calculate P values (*for P≤0.05 and **P≤0.01).

improvement in results. While these results do not evaluate quality of care due to the outcome measures used, there is an opportunity for physicians to motivate patients in clinics to take responsibility for their own physical and mental health, and to prevent future comorbidities through regular counseling and information reinforcement.

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ER Visit Waiting Times for Gastrointestinal Bleeding and Abdominal Pain: Time Trends from 2002-2010 and Racial Differences in the United States

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Purpose: To investigate (1) recent time trends for presentation to ER with gastrointestinal (GI) bleeding or abdominal pain and (2) to investigate potential racial disparity in medical care in ER between African-Americans vs Caucasians for these two presenting complaints.
Methods: Retrospective, cross-sectional analysis of GI bleeding and abdominal pain using limited access dataset of National Hospital Ambulatory Medical Care Survey in United States from years 2002-2010 using ICD-9 codes. Number of visits/annum was examined in 2002-2005 vs 2006-2010. Trends in weighted frequency visits were stratified according to the following patient's demographic variables: age, gender, race, ethnicity, insurance carrier, and hospital location. Also, racial differences were stratified according to severity of abdominal pain, as indicated by a qualitative pain scale from 1 to 10, or severity of GI bleeding, as indicated by anemia and hypotension. Racial differences in ER care were evaluated using waiting times. Statistical analysis was performed using SAS 9.3. Multivariate logistic regression model was used to compute odds ratio for trend analysis.
Results: There was an overall 22.2% increase in the number of ER visits/annum due to GI bleeding from 2002-2005 to 2006-2010. Among patients with GI bleeding, African-Americans had significantly longer waiting times in ER (% with waiting time <60 min) than Caucasians (OR 0.71; 95% CI 0.55-0.92; p<0.05). The longer waiting times among African-Americans was not explained by their having less severe GI bleeding. Among Caucasians, privately insured patients had significantly shorter waiting times compared to Medicare patients (OR 1.42; 95% CI 1.02-1.9; p=0.01). Among African-Americans, patients without insurance had longer waiting times than those with private insurance (OR 0.45%; 95% CI 0.22-0.91; p<0.01). Abdominal pain comprised 10.6% of the presenting complaints among ER visits from 2002-2010. The abdominal pain was severe in 46.2% of patients. Among patients with severe abdominal pain, African-Americans had significantly longer waiting times than Caucasians (OR 0.63%; 95% CI 0.55-0.73; p<0.001).
Conclusion: ER visits for GI bleeding have been recently increasing in adults. These results suggest a possible longer waiting time for African-Americans in the initial clinical assessment for ER visits for either GI bleeding or abdominal pain.

1579

Cost-effectiveness of Competing Strategies for Recurrent *Clostridium difficile* Infection

ACG/AstraZeneca Fellow Award

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Purpose: *Clostridium difficile* infection (CDI) is an important cause of morbidity and healthcare costs, and is characterized by high rates of recurrent disease. Several recent options have emerged for treatment of recurrent CDI. The cost-effectiveness of such strategies depends not only on treatment-associated costs, but potential health and cost benefits through preventing future recurrences. The cost-effectiveness of newer and effective competing strategies has not been examined, yet would be an important tool to inform clinical practice.
Methods: We constructed a decision-analytic model comparing four strategies for a first episode of recurrent CDI: metronidazole, vancomycin, fidaxomicin and fecal microbiota transplantation (FMT). We modeled up to two additional recurrences following the initial episode. We assumed FMT delivery via colonoscopy as our base-case, but conducted sensitivity analyses based on different modes of delivery. The robustness of the model was assessed using one-way and probabilistic sensitivity analysis. The time horizon for the model was 6 months; willingness to pay threshold was set at $50,000 per QALY.
Results: At our base-case scenario, FMT was the most cost-effective strategy, with an incremental cost-effectiveness ratio (ICER) of $46,419 compared to vancomycin. Fidaxomicin and metronidazole were both dominated by FMT colonoscopy, owing to higher costs and lower efficacy. FMT remained the most cost-effective strategy at cure rates greater than 96.4%, CDI recurrence rate less than 6.9% and cost up to $1223. Fidaxomicin became the preferred strategy at costs of less than $1,561 for one course of therapy. In a model incorporating FMT delivery via enema or nasoduodenal infusion, FMT colonoscopy remained the most cost-effective strategy. But if comparable efficacy could be achieved with non-colonoscopic delivery, such strategies would be preferred due to lower cost of instillation. In clinical settings where FMT is not available, the most cost-effective strategy was initial treatment with vancomycin; fidaxomicin had a cost-prohibitive ICER of $462,706 per QALY compared to vancomycin.
Conclusion: In this decision analysis examining treatment strategies for recurrent CDI, we demonstrate that FMT colonoscopy is the most cost-effective strategy for management of recurrent CDI. Therapies with efficacy comparable to fidaxomicin require modestly lower costs to be cost-effective.

1580

Blatchford Scoring System Is a Useful Scoring System for Detecting Patients with Upper Gastrointestinal Bleeding Who Do Not Need Endoscopic Intervention

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Purpose: Upper gastrointestinal (UGI) bleeding is a common and important problem encountered by clinicians and emergency department (ED). Although emergency endoscopy is acceptable and effective for treatment of UGI bleeding, the evaluation of urgency and severity of UGI bleeding is important for efficiency and safety, especially in night time. For this purpose, several scoring systems have been developed to identify patients with upper gastrointestinal (UGI) bleeding who are at a high risk of adverse outcomes. One of these is the Blatchford scoring system which is designed to calculate the risk score based on clinical variables to assess if patients with acute UGI bleeding need invasive treatments such as blood transfusion, operative or endoscopic interventions to control their hemorrhage. We previously reported that the Blatchford scoring system possibly indicate the low risk of UGI bleeding prior to the performance of emergency UGI endoscopy (Masaoka T, et al. *J Gastroenterol Hepatol* 22; 1404-1408, 2007). Nowadays, the causes of UGI bleeding were supposed to be changed because of widespread of *Helicobacter pylori* eradication therapy for peptic ulcer, we aimed to re-evaluate the Blatchford scoring system for acute UGI bleeding from 2012 to 2013.
Methods: This was a retrospective study conducted on patients who visited ED of Keio University Hospital between September 2012 and June 2013 by symptoms suspicious for UGI bleeding like hematemesis, melena and syncope. The study was conducted with the approval of the Ethics Committee at the Keio University School of Medicine (No. 20130069). The Blatchford scoring system was used for evaluation of the risk of UGI bleeding. Those who needed blood transfusion, operative or endoscopic interventions to control the hemorrhage were classified into the 'high-risk' group.
Results: Thirty-nine patients were enrolled for this study. In detail, 24 patients (61.5%) are peptic ulcer, six patients (15.4%) are esophageal varix, and two patients (5.1%) are Mallory-Weiss syndrome. The proportion of peptic ulcer in 2012-13 was comparable with 2004-05 (2004-05; 65.6%, 2012-13; 61.5%; p=0.41). Among 39 patients, 28 patients (71.8%) were classified into the high risk group. The Blatchford score in the high risk group was higher than in the low risk group (low-risk group, 5.42 ± 4.14, high-risk group, 11.70 ± 3.21; p<0.001). As previously described, when a cut-off value of 2 was used, the sensitivity and specificity of the Blatchford scoring system were 100% and 33%, respectively.
Conclusion: The Blatchford scoring system is still accurate for identifying definitively low risk patients of GI hemorrhage, prior to the performance of emergency UGI endoscopy at the ED.

1581

Health Insurance Carrier Does Matter: Clinically Significant Variation in Weight-related Diagnoses for Medicaid versus Medicare versus Private Insurance versus Self Pay in 83,059 Morbidly Obese Patients

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Purpose: Clinical management of morbidly obese patients is a growing challenge. In this milieu, every bit of new information adds to the therapeutic acumen and improves patient outcomes. However, the interaction of insurance status with weight-related medical illnesses is unknown.

[1581] Morbid obesity and insurance status

Results:	Medicaid	Medicare	Private insurance	Self-pay	P value
Age	49±10	54±12	44±11	44±12	<0.0001
BMI	50±9	49±9	47±8	49±9	<0.0001
Sex (F/M %)	87/13	76/24	78/22	73/27	<0.0001
Diabetes (DM)	38.06%	57.31%	36.69%	34.7%	<0.0001
Hypertension (HTN)	55.61%	78.16%	58.49%	55.26%	<0.0001
CHF	3.33%	7.47%	1.58%	1.61%	<0.0001
Ischemic Heart Disease	3.3%	10.75%	3.72%	2.48%	<0.0001
Hyperlipidemia (HPL)	36.01%	58.72%	42.36%	39.52%	<0.0001
Angina	4.6%	6.07%	2.46%	1.61%	<0.0001
GERD	51.29%	57.17%	49.04%	41.13%	<0.0001
Liver Disease	7.59%	8.45%	7.26%	5.09%	<0.001
Cholelithiasis	25.36%	30.63%	21%	16.68%	<0.0001
Asthma	26.81%	26.37%	17.45%	12.93%	<0.0001
Obstructive Sleep Apnea (OSA)	52.13%	60.44%	46.88%	43.07%	<0.0001
Back Pain	57.73%	62.94%	48.62%	43.80%	<0.0001
Gout	4.51%	7.35%	3.41%	2.41%	<0.0001
Irregular Menses	27.08%	31.07%	23.85%	16.68%	<0.001
Depression	45.66%	50.47%	34.19%	34.19%	<0.0001
Unemployed	46.38%	78.01%	10.99%	14.47%	<0.0001

Objective: To identify variations in the distribution of weight-related medical problems according to the type of health insurance carried by morbidly obese patients.
Methods: Pre-operative data on 83,059 patients from the Surgical Review Corporation's BOLD database who were about to undergo laparoscopic Roux-en-Y gastric bypass was examined in four groups: Medicaid (n=3,305), Medicare (n=8,643), private insurance (n=60,163), and self-pay (n=1,493). Analysis of variance tested continuous variables. Dichotomous parameter distribution was assessed by the Chi-squared equation.
Results: See Table.
Conclusion: Weight-related medical problems vary according to the patients' healthcare insurance status. Morbidly obese Medicare participants are oldest and have the highest rates of DM, HTN, CHF, ischemic heart disease, HPL, angina, GERD, liver disease, cholelithiasis, OSA, back pain, gout, irregular menses, depression, and unemployment. Medicaid had the highest BMI and asthma rates, and was second only to Medicare in most co-morbidities. Private insurance patients had fewer obesity-related problems than did Medicaid and Medicare, and the lowest unemployment rate, 10.99%. Among self-pay individuals, nearly all other obesity-related co-morbidities were lower than all other groups. These results suggest that index of suspicion for weight-related medical problems should be heightened when treating obese Medicare and Medicaid patients.

1582

Clinical Outcomes of In-hospital PEG Tube Placement

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Purpose: To determine the clinical outcomes of patients who underwent percutaneous endoscopic gastrostomy (PEG) tubes while in the hospital.
Methods: We performed a retrospective chart review of all the hospitalized patients who had a PEG tube placed at a single community-based teaching hospital from January 2000 to December 2010. We evaluated the patients' age, indications for the PEG tube, comorbidities, complications, length of stay and disposition.
Results: The average patient age at the time of PEG tube placement was 72. The most common indication for PEG placement (33%) was a cerebral vascular accident (CVA). Most patients (56%) were discharged to a short-term nursing facility (SNF), while 7.6% of patients expired in the hospital. 73% of patients whose indications for PEG tube was head and neck cancer were discharged to home, 78% of patients whose indication was a CVA were discharged to a SNF, and 19% of those whose indications were due to prolonged intubation expired. Patients ≥ 80 years old were significantly more likely to expire in the hospital than patients <80 (13 vs 5%, p<0.001). 36% of patients who underwent PEG tube placements after having open heart surgery expired. Compared with other indications, patients who had PEG tubes placed due to CVA were more likely to develop an aspiration pneumonia (RR 1.64 [1.19-2.26]), those placed due to prolonged intubation had a higher rates of mortality (RR 2.87 [1.42-5.81]), DVT (RR 3.74 [1.58-8.85]) and infection (RR 3.65 [1.77-7.53]). PEG tubes placed due to head and neck cancers were less likely to develop an aspiration pneumonia (RR 0.42 [0.2-0.87]) or any morbidity or mortality (RR 0.62 [0.43-0.91]). 37% of patients under the age of 80 and 21% of patients over the age of 80 were discharged to home. Patients who developed an aspiration pneumonia had their PEG tubes placed later in the hospital course on average, as opposed to those who did not have an aspiration pneumonia (11 vs 7 days, p<0.001).

[1582] Comparison of age and indication to discharge disposition

Age/indication	Expired	Home	Hospice	SNF
<80	18 (5.0%)	134 (37.2%)	14 (3.9%)	194 (53.9%)
≥80	22 (13.2%)	36 (21.6%)	6 (3.6%)	103 (61.7%)
CVA	8 (4.6%)	27 (15.5%)	2 (1.1%)	137 (78.7%)
Dysphasia	2 (20%)	3 (30%)	0 (0%)	137 (78.7%)
Gastric Decompression	1 (2.9%)	22 (62.9%)	10 (28.6%)	2 (5.7%)
Head and Neck Cancer	3 (4.2%)	52 (73.2%)	3 (4.2%)	13 (18.3%)
Neurological disorder	14 (11.3%)	39 (31.5%)	1 (0.8%)	70 (56.5%)
Prolonged Intubation	8 (19.5%)	11 (26.8%)	0 (0%)	22 (53.7%)
Trauma	0 (0%)	1 (3.7%)	1 (3.7%)	25 (92.6%)
Esophageal Obstruction	2 (10.5%)	9 (47.4%)	0 (0%)	8 (42.1%)
FTT/Malnutrition	2 (7.7%)	6 (23.1%)	3 (11.5%)	15 (57.7%)

Conclusion: Patients over the age of 80 who have PEG tubes placed are more likely to expire and less likely to be discharged home than younger patients. Our study suggests that patients requiring PEG tubes have fewer complications and shorter hospital stays if the PEG tube is placed earlier during hospitalization.

1583

Comparison of Clinical Outcome of Peptic Ulcer Bleeding According to the Different Etiology: *Helicobacter pylori* Infection or Drug Use

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Purpose: The peptic ulcer has two major etiologies: *Helicobacter pylori* (*H. pylori*) and drug. Its bleeding can be severe, but the severity of bleeding according to the etiology has rarely been reported. We aim to evaluate the clinical outcomes and severities of peptic ulcer bleeding (PUB) according to the etiology.
Methods: A consecutive series of patients who had PUB and admitted to the hospital between 2006 and 2011 were retrospectively analyzed. A total of 232 patients were enrolled in this study, and we compared the clinical characteristics, outcomes according to the different etiologies (*H. pylori* only / Drug only / *H. pylori* and drug / Idiopathic group). We also evaluated severity using Blatchford score and Rockall score between four groups.

Results: In the drug only group, patients were older (mean age: 68.49 ± 14.76 years vs. 47.84 ± 15.14 years, P<0.01), the duration of admission was longer, (8.52 ± 8.97 days vs. 5.60 ± 2.41 days, P<0.01), the ulcer size were larger (1.24 ± 0.92 cm vs. 0.86 ± 0.51 cm, P<0.01) and transfusion need (calculated by packed red cell number) is more frequent(3.58 ± 4.95 vs. 2.21 ± 1.98, P=0.01) than the *H. pylori* only group. Blatchford score and Rockall score of the drug only group are higher than the *H. pylori* only group (9.78 ± 3.77 vs. 8.56 ± 3.71, P=0.03 and 4.73 ± 2.21 vs. 3.05 ± 1.54, P<0.01, respectively). Blatchford and Rockall score of *H. pylori* and drug group are higher than *H. pylori* only group (10.40 ± 3.94 vs. 8.56 ± 3.71, P=0.02 and 4.73 ± 1.87 vs. 3.05 ± 1.54, P<0.01, respectively). In the idiopathic group, the ulcer size was larger (1.21 ± 0.65 cm vs. 0.86 ± 0.51 cm, P≤0.01) and re-bleeding rate after initial hemostasis was higher (25 % vs. 7.8 %, P=0.02) than *H. pylori* only group. However, there was no significant difference of Blatchford and Rockall score between the two groups.

Conclusion: Clinically, drug-induced PUB seems to be more severe than *H. pylori*-associated PUB. Idiopathic ulcer has a bigger size and a more frequent rate of re-bleeding than peptic ulcers with *H. pylori* infection.

1584

Use of Infliximab for Inflammatory Bowel Disease (IBD) within a Nationwide Case Management System: An Assessment from the Patient's Perspective

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Purpose: In Canada, patients with ulcerative colitis and Crohn's disease treated with infliximab are predominantly managed through a nationwide case management system. The case management system assigns patients a case manager who coordinates treatment between the patient, physician and a network of infusion clinics. The aim of this study was to assess the patient's experience of infliximab therapy administered through a case management system.

Methods: Patients currently receiving infliximab therapy within the case management system were given an informational brochure to access a web-based survey from August 1, 2012 to September 30, 2012. The survey included items on demographic and disease characteristics, and asked qualitative questions about the respondents' perception of their absenteeism and disability status before and after receiving therapy. Respondents were also asked to assess the effectiveness of the therapy and the case management system with regards to adherence and disease management.

Results: Out of 10,000 brochures distributed, there were 1,160 respondents (11.6%), of which 888 reported being treated for IBD. Of the IBD respondents, 846 completed the survey. The IBD respondents were comprised of 51% (n=431) males with a mean age of 39 (SD=20), with 72% (n=609) reported as being treated for Crohn's disease and 28% (n=237) reported being treated for ulcerative colitis. In addition, 72% (n=611) of respondents reported being employed full time or part time, while 10%, 7%, 10% were unemployed, retired or students, respectively. When asked about time on therapy, 48% (n=407) of respondents reported to be receiving therapy for greater than two years, while 24% (n=206) and 28% (n=233) of respondents reported being on therapy for 1-2 years and 12 months or less, respectively. When asked about time missed from work/school prior to starting therapy, 33% (n=278) of respondents reported missing greater than five days of work/school prior to therapy, while only 7% (n=58) of respondents reported missing greater than five days of work/school after receiving therapy. When asked about their disability status prior to receiving therapy, 33% (n=282) of patients reported being on disability insurance prior to therapy, while only 9% (n=77) of patients reported being on disability insurance after receiving therapy. Overall, 58% (n=487) of respondents felt that the case management system was helpful in ensuring their medication was taken on time. Finally, 74% (n=624) of patients viewed the case management system as either important or very important in their disease management.

Conclusion: IBD patients receiving infliximab within the nationwide case management system report a positive impact on absenteeism, disability, adherence and disease management.

Disclosure - Kuhan Perampaladas- Manager of Health Economics and Reimbursement: Janssen Inc.

1585

Prevalence of Gastrointestinal Bleeding among Patients with Left Ventricular Assist Devices: A Systematic Review

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Purpose: Gastrointestinal bleeding (GIB) is increased in patients with left-ventricular assist devices (LVADs), likely due to increased formation of angiodysplastic lesions (AVMs) from an acquired von-Willebrand's deficiency. We performed a systematic review in order to assess the prevalence of GIB in patients with LVADs.

Methods: A literature search was conducted using Pubmed and SCOPUS from 1990-2013 using the terms "left ventricular assist device," "gastrointestinal bleeding," "upper endoscopy," "colonoscopy," "capsule endoscopy," and/or "deep enteroscopy." Articles were included if they contained information regarding GIB in LVAD patients. We excluded case reports. Summary statistics were performed for the key variables of the included articles including mean age, gender, type of LVAD, usage of anticoagulation, presence of other co-morbid conditions, and mortality.

Results: The literature search resulted in 229 articles. After exclusion of duplicates, case reports, and review articles, we included 15 papers. Table 1 demonstrates demographic features for LVAD patients with and without GIB. While there were no significant differences in age, gender, or race, patients with GIB were more likely to have continuous-flow LVADs, ischemic cardiomyopathy,

[1585] Table 1. Demographic features of LVAD patients with GIB

Parameter	Patients with GIB (N=179)	Patients without GIB (N=567)	P value
Mean (±SD) Age	61±9	54±11	NS
Male Gender	143 (80%)	429 (76%)	NS
Caucasian Race	99 (56%)	313 (55%)	NS
Non-Transplant Status	63 (35%)	230 (46%)	0.01
Ischemic cardiovascular disease	122 (68%)	283 (50%)	<0.05
Type of LVAD			
Pulsatile	19 (10%)	167 (90%)	
Continuous	62 (28%)	161 (72%)	<0.05
Medications			
Aspirin	140 (78%)	447 (79%)	NS
Other Antiplatelet	54 (30%)	188 (33%)	NS
Anticoagulant	129 (72%)	430 (76%)	NS
Proton pump inhibitor	106 (59%)	329 (58%)	NS
Mortality	50 (28%)	172 (30%)	NS
History of GIB	21 (12%)	41 (7%)	0.06
Chronic renal insufficiency	51 (29%)	68 (12%)	<0.05
Diabetes Mellitus	70 (39%)	218 (39%)	NS

GIB=Gastrointestinal Bleeding; LVAD=left-ventricular assist device; NS=non-significant.

[1585] Table 2. Characteristics of LVAD patients with gastrointestinal bleeding[a]

Author, Year	No. patients	Patients with GIB (%)	Recur bleed	Location[b] (UGIB/LGIB/Small Bowel)	% AVM	Mean days to bleed	All cause mortality
John, 2008	32	5 (16%)	N/A	N/A	N/A	N/A	9%
Crow, 2009	55	12 (22%)	5%	N/A	44%	N/A	15%
Uriel, 2010	79	24 (30%)	N/A	N/A	N/A	112	19%
Aggrawal, 2010	101	23 (23%)	10%	57% 35% 4%	24%	128	25%
Hayes, 2010	36	5 (13%)	6%	60% 20% 20%	60%	303	N/A
Demirozu, 2011	172	32 (19%)	5%	52% 49% 0%	31%	40	N/A
John, 2011	102	18 (18%)	N/A	N/A	N/A	N/A	21%
Kushnir, 2012	112	24 (12%)	10%	44%	31%	159	35%
Morgan, 2012	86	19 (22%)	5%	N/A	N/A	176	17%
Stern, 2012	20	8 (40%)	15%	35% 0% 65%	33%	87	N/A
Swiecicki, 2013	9	3 (33%)	N/A	N/A	N/A	N/A	56%
Hasin, 2013	115	27 (24%)	N/A	N/A	N/A	N/A	N/A
Wever-Pinzon, 2013	134	23 (18%)	5%	N/A	61%	N/A	N/A

[a]Studies with only continuous LVADs.

[b]UGIB defined as proximal to the ligament of Treitz and LGIB as distal to the terminal ileum. Small bowel bleeding defined as source found between these two landmarks and identified on video capsule endoscopy. N/A=data not available.

and non-transplant status. History of prior GIB and chronic renal insufficiency were risk factors for subsequent bleeding. Aspirin, anti-platelet, oral anticoagulant, and proton pump inhibitor use were not significantly associated with bleeding. Table 2 demonstrates the prevalence of GIB, recurrence rates, and type of bleeding from the 13 studies where this data was available. GIB occurred in 223/1053 (23%) of continuous-flow LVAD patients with recurrence rates of 8%. Based on data from 8 papers, there were an average of 32 GIB episodes per study, or 0.4 per patient. Prevalence data was reported in 5 studies and included upper GIB in 49%, lower GIB in 26%, and mid-gut in 24%. AVMs were the cause of GIB in 40% based on 7 studies, and the mean time to bleeding was 86 days post-LVAD placement. Overall mortality was 24%, and was not higher in the GIB cohort.

Conclusion: This systematic review demonstrated that GIB occurred in approximately one-quarter of patients receiving LVAD placement. The rate of GIB was much higher following continuous-flow as compared to pulsatile-flow LVAD placement. Non-transplant status, ischemic cardiac disease, history of GIB, and chronic kidney insufficiency were significantly associated with GIB. While nearly half of the patients had bleeding sources found in the upper GI tract, small bowel sources were detected in one quarter of the patients. AVMs were more common in the LVAD population compared to patients with GIB in the general population.

1586

Economic and Operational Impact of Quik Chek Complete® in Patients Suspected of *Clostridium difficile* Infection (CDI)

Presidential Poster

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Purpose: It is important that stool testing for CDI be accurate and cost effective, with results obtained in timely fashion. Glutamate dehydrogenase (GDH), a marker for *C. diff* organism in feces, is sensitive and has a high negative predictive value. Toxin detection by EIA is reasonably specific for presence of toxin, but lacks sensitivity. Testing for CDT by PCR is sensitive but expensive, and results are not rapidly available. We evaluate a two-step algorithm whereby GDH testing along with toxin EIA is performed first (*C. diff* Quik Chek Complete®, TechLab, Inc.) (-) GDH & EIA= (-) CDI. (+) GDH & EIA= (+) CDI. Other results require testing for toxin gene by PCR.

Methods: 300 consecutive patients were tested. Stool specimens sent to lab for detection of CDT were "split"; one portion of each sample was tested for the presence of GDH and toxins A&B by the *C. diff* Quik Chek Complete® assay. The second portion was sent for testing by PCR (Diatherix labs). Clinicians were blinded to Quik Chek (QC) results. Data collected: Time interval between receipt of specimen in lab and results obtained by QC, and by PCR testing. Potential cost saving was calculated, assuming (+) GDH and CDT on QC= (+) CDI, whereas (-) GDH and CDT on QC= (-) CDI.

Results: (1.) Of the 300 specimens tested, 229 were (-) on both QC and PCR. At cost of QC $12 vs. $260 PCR, two-step algorithm saved $56,792. (2.) 23 patients with GDH (+), EIA (-) required PCR confirmation (PCR [+]), resulting in additional cost of $276. (3.) 22 with GDH (+), EIA (-) required PCR confirmation (PCR [-]), additional cost of $264. (4.) Three patients were GDH (-), EIA (+), PCR (-) a cost of $36. (5.)14 patients were (+) by GDH, EIA, PCR. Two-step algorithm saved $3,640. (6.) Of the 300 patients, important discordant results were found in nine. Six patients were GDH & EIA (+) but PCR (-). Three patients were negative by GDH and EIA, and positive by PCR.

Conclusion: (1.) An algorithm first testing with QC and reflex testing for CDT by PCR for equivocal QC results = cost savings of $59,856 for the 300 patients tested at our institution (a time span of three months). (2.) Mean delay to diagnosis by PCR alone vs. QC was 33 hours, potentially resulting in delay of treatment and isolation measures. (3.) No patients with (-) GDH had both (+) EIA and PCR, confirming reliability of (-) GDH in excluding dx of CDI. (4.) Concordance between the two testing methods was good. Nine patients (3%) had important discordant results. Since our study was observational and patients were treated based on PCR results, we are unable to discern whether these patients represent misdiagnosis by QC or by PCR.

1587

Changes in Domperidone Prescribing Practices after a "Black Box" Warning: Are We Exposing Inpatients to Unnecessary Cardiac Risk?

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Purpose: Domperidone is used in Canada as a motility and antiemetic agent. Inappropriate use is of particular concern because of its associated risks of life-threatening ventricular arrhythmias and sudden cardiac death. This study aimed to assess the impact of a Health Canada advisory in 2012 on domperidone prescription patterns.

Methods: A retrospective chart review was conducted for consecutive patients at two tertiary care sites prescribed domperidone before and after the Health Canada advisory during quarters in 2005 and 2012, respectively. Study patients included those prescribed domperidone during hospital and those with preexisting prescriptions. The main outcome assessed was appropriateness of domperidone prescription based on: 1) Health Canada-approved indications, 2) dosing regimens, and 3) pre-treatment assessment, including measurement of serum potassium (K+), magnesium (Mg+) and calcium (Ca2+) levels, performance of baseline ECG, monitoring of QTc intervals and left ventricular (LV) dysfunction, and co-prescription of other QT-prolonging medications. Differences in outcomes between 2005 and 2012 were evaluated by univariable and multivariable analyses.

Results: A total of 577 patients were included: 290 in 2005 (mean age 62.4) and 287 in 2012 (mean age 67.9). Compared to 2005 (prior to the Health Canada advisory), significantly less domperidone was initiated in hospital (71.4% vs. 39.4%, p<0.0001), or was prescribed for non-approved indications (84.8% vs. 58.2%, p<0.0001) or at inappropriate doses >30 mg/day (65.5% vs. 47.4%, P<0.0001) in 2012 (after the Health Canada advisory). In a multivariable model, in-hospital initiation (OR 7.01, 95% CI 4.52-10.87, p<0.0001) and domperidone use as a sole GI drug (OR 2.51, 95% CI 1.38-4.55, p=0.002) predicted prescription with non-approved indications. Basic cardiac risk assessment and the performance of baseline laboratory tests were not routinely done prior to initiation of domperidone, although there was improvement in 2012 compared to 2005 (Table 1).

Conclusion: There has been more appropriate use of domperidone following the Health Canada warning. Yet, inappropriate utilization and inadequate pre-treatment assessment remain common. Increased awareness of domperidone's indications and adverse effects could serve to reduce inappropriate prescription and thereby improve patient safety and reduce cost.

[1587] Table 1. Assessment prior to domperidone initiation during hospitalization—2005 vs. 2012

Safety parameter	2005 vs. 2012 (OR)	95% CI
ECG Performance	0.032	0.006–0.156
QTc Interval	0.025	0.005–0.119
Ca^{2+} Level	0.311	0.147–0.651
Mg^{2+} Level	0.48	0.20–1.11
K^{+} Level	1.62	0.73–3.63
LV Grade	0.220	0.101–0.481
Use of Other QT-Prolonging Drugs	0.74	0.38–1.48

1588

Gastroenterology Educators Must Be Aware that the Perceived Difficulty of Core Competencies Change based Upon Fellowship Training Year

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Purpose: The Accreditation Council for Graduate Medical Education (ACGME) is reassessing how it evaluates and accredits post-graduate training programs in the United States. It has established that training programs should structure their curriculum around six core competencies. These competencies categorize the skills to be mastered during training. Training programs will be assessed on trainees successfully reaching milestones within these competencies. As a trainee advances through the training program, it is reasonable to expect that there will be a shift in the perceived difficulty of mastering particular core competencies. Competency-based milestones and curricula will need to be designed to account for these changes in perception. This study sought to identify the shift in perceived difficulty in mastering the core competencies as they relate to training year.

Methods: During monthly sessions between gastroenterology fellows and the program director at a university-based training program, issues related to core competencies are routinely discussed. The purpose of these meetings is to assess the effectiveness of the present curriculum and address concerns raised by the trainees. The ACGME core competencies include Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism and Systems-Based Practice. During the end of year review, fellows are asked to rank the core competencies as they perceive them from most challenging to least challenging at their level of training. Information collected during these sessions is used to enhance the curriculum of the training program.

Results: Medical Knowledge and Systems-Based Practice ranked within the top three most challenging core competency amongst fellows in all three years. Medical Knowledge was considered the most challenging core competency in the first and second year of fellowship training. Systems-Based Practice ranked highest amongst fellows in the third year of training. Professionalism and Interpersonal Skills and Communication were considered the most facile competencies amongst trainees in all three years.

Conclusion: Expected in 2014, trainees' progress and development will be measured by successful completion of competency milestones. As trainees advance through the fellowship program, there is a shift in the perceived difficulty of the core competencies. While Medical knowledge is the focus of the first year fellows, the senior fellows perceive Systems-based Practice as the greatest challenge. It will be imperative that competency-based milestones and curricula be designed to address the changing perceptions held by the trainees.

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Skin Cancer Screening in Inflammatory Bowel Disease Patients on Chronic Immunosuppressant Therapy: A Quality Improvement Project

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Purpose: Inflammatory bowel disease (IBD) patients on chronic immunosuppressants are at increased risk of melanoma and nonmelanoma skin cancer (NMSC). As part of an initiative to assess care in a tertiary IBD center, we undertook a quality project to assess how often IBD patients are evaluated for skin malignancies.

Methods: We used DMAIC (Define, Measure, Analyze, Improve, Control) methodology to first assess the amount of screening that occurs. We retrospectively reviewed patient charts from 10/1/2011 to 11/1/2012 of adults in a single tertiary care center undergoing a first consultation in

the IBD Clinic and who had been on immunosuppressive therapy for at least 6 months. Information collected included demographics, clinical status and skin care work-up launched at the time of the IBD consultation.

Results: 141 patients satisfied study criteria. 71 (50%) were female and the majority (126 patients, 89%) were Caucasian. The average age was 36 years (STD 12.7 years). 93 patients (66%) had Crohn's, 37 (26%) patients had ulcerative colitis and 11 (8%) had indeterminant colitis. 73 (52%) patients were on TNFα inhibitor monotherapy, 32 (23%) patients were on combination therapy with a TNFα inhibitor and another immunomodulator (thiopurine, prednisone or methotrexate), 23 (16%) patients were on thiopurine monotherapy, 6 (4%) patients were on combination therapy not containing a TNFα inhibitor, 4 (3%) patients were on prednisone monotherapy, and 3 (2%) patients were on methotrexate monotherapy. The median duration of immunosuppression was 18 months (range, 6 mo to 31 yr). During their IBD consultation, none of the patients underwent a primary skin cancer screening, defined as discussions regarding sun avoidance, sun protection and minimization of modifiable risk factors for skin cancer. Only 3 patients were educated regarding their increased skin cancer risk. A documented recommendation to use sun screen was provided to just one patient. Eighty-three (59%) patients had a skin exam listed, which was limited in all but two patients. None of the patients were referred to dermatology for a full skin exam or skin cancer screening.

Conclusion: Currently, there is a paucity of skin cancer counseling and monitoring in IBD patients. Improving clinician awareness regarding the increased risk of melanoma and NMSC in IBD patients on immunosuppressants is critical for the provision of optimal care and reduction of morbidity and mortality in this at risk population. Our next step is to share these results with clinicians, and then develop a process for identifying those at higher risk for appropriate referral.

1590

Internet Search Patterns for Gastroenterological Symptoms and the Relationship to Physician Visits

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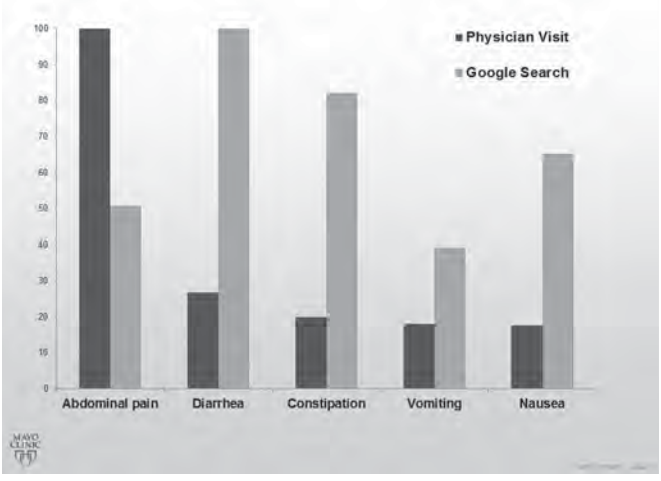
Purpose: The number of patients using the internet for healthcare information is exponentially increasing. A Pew research survey from 2012 found that 81% of U.S. adults access the internet, with 80% of those adults looking online for health-related information. Gastrointestinal (GI) diseases affect 60-70 million U.S. citizens annually. Given the high prevalence of GI disorders, the aim of this study was to explore internet search patterns of GI symptoms and compare those patterns with physician visit data.

Methods: Google is the most commonly used search engine in the world, handling more than one billion search queries daily. Google Trends analyzes Google web searches to compute how many searches have been performed for particular terms, and the data is displayed on a scale of 0 to 100. National Ambulatory Medical Care Survey (NAMCS) is an annual national survey which estimates physician visits for specific conditions. Leading GI symptoms for outpatient clinic visits in the U.S. were obtained from the 2009 NAMCS database and compared to Google Trends data.

Results: Based on NAMCS data, the five most common GI symptoms associated with physician visits in order of frequency were abdominal pain, diarrhea, constipation, vomiting and nausea. Google Trends data shows that the most common GI symptoms which were searched on the internet in order of frequency were diarrhea, constipation, heartburn, nausea and vomiting (see Figure). During the study period, the most common GI symptom responsible for doctor visits was abdominal pain, resulting in 15.8 million visits; additionally, GI bleeding led to 2.7 million physician visits during the study period, but neither abdominal pain nor GI bleeding were featured among the top five searches on the internet for GI-based symptoms.

Conclusion: The distribution of internet search volume for GI symptoms does not correlate with volume of physician visits. A possible explanation for this finding is that patients may present to physicians for more ominous symptoms (like abdominal pain and bleeding), but attempt to manage milder symptoms on their own. Understanding internet search patterns can help health care providers to be more involved in online patient education.



[1590] Figure 1. Compares the physician visit volume data from NAMCS to search volume data from Google trends for GI symptoms.

1591

Comparing Internet Search Patterns for Gastroenterological Diagnoses to Physician Visit Data

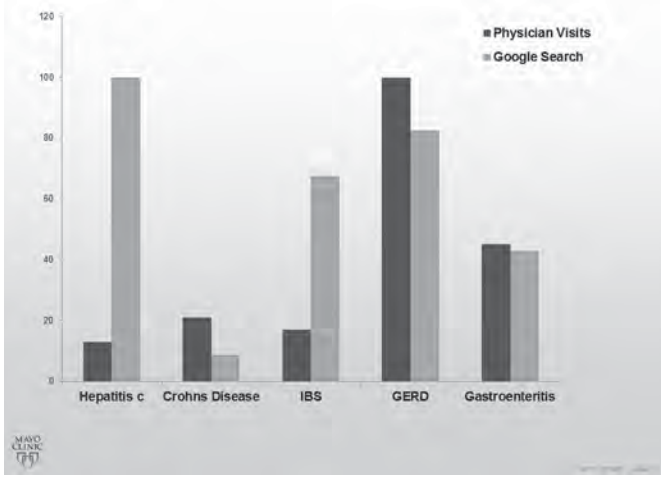
Renumathy Dhanasekaran, MBBS, Amy Oxentenko, MD, FACG. Gastroenterology and Hepatology, Mayo Clinic, Rochester, MN.

Purpose: Healthcare-related information is one of the most commonly searched categories on the internet. A Pew research survey from 2012 showed that 35% of U.S. adults admitted to going online specifically to understand medical conditions. In 2009, GI diseases led to approximately 250,000 deaths in the US. Given the high prevalence of GI disorders, the aim of this study was to explore internet search patterns of GI diagnoses and compare those patterns with physician visit data.

Methods: Google is the largest search engine online, and Google Trends is a tool which makes Google search data available publicly. Google Trends analyzes Google web searches to compute how many searches have been performed for particular terms, with the data displayed on a scale of 0 to 100. National Ambulatory Medical Care Survey (NAMCS) is an annual national survey which estimates physician visits for specific conditions. Leading GI diagnosis for outpatient clinic visits in the U.S. from the NAMCS data was compared to Google Trends data.

Results: Based on NAMCS data, the five most common GI diagnoses associated with physician visits were gastroesophageal reflux disease (GERD), gastroenteritis, inflammatory bowel disease (IBD), irritable bowel syndrome (IBS) and hepatitis C. Google Trends data revealed that the most common GI diagnoses accounting for internet searches were hepatitis C, GERD, IBS, gastroenteritis and IBD (see figure). The peaks in Google search volume for hepatitis C were noted to coincide with important press releases about the condition. When trends in search patterns were compared, the internet interest in Crohn's disease and GERD were noted to have a 300% increase compared to previous years.

Conclusion: The volume of internet searches for GI diagnoses does not correlate with the volume of physician volumes, but does appear to reflect media coverage. Additionally, there is a strong trend of increased interest in GI diagnoses over time. Analysis of internet use patterns can be used by physicians to design better outreach and awareness programs for GI conditions.



[1591] Figure 1. Compares Google trends data to NAMCS data for physician visit for specific GI diagnoses in the year 2009.

1592

Sometimes Being Predictable Is a Good Thing: The Chronic Constipation Patient's Perspective

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Purpose: To explore the concept of predictability related to treatment and symptom experience and its importance to patients with chronic constipation (CC).

Methods: Two iterative sets of qualitative interviews were conducted with 16 patients meeting Rome II criteria for CC in 2 geographic locations. A semi-structured interview guide, primarily comprising open-ended questions, was used to elicit the interpretation and importance of predictability related to treatment and symptom experience. In addition, draft items addressing varying concepts related to predictable symptom relief were debriefed to facilitate the discussion. At the end of each interview, patients were asked to identify which concepts were the most important and relevant to them.

Results: During the interviews, patients consistently expressed a desire for the ability to accurately predict the effects of CC treatment, broadly encompassing both sustained effectiveness and a lack of bothersome side effects (Table 1). Although predictability was initially considered to be a positive attribute of a CC medication, some patients commented that a lack of symptom improvement or the occurrence of side effects would be predictable but not desirable. Every patient indicated that they wanted a medication to "work," most commonly referencing a desire for regularly occurring (daily

or every other day) bowel movements (BMs). Additional concepts commonly cited by patients as most important included the ability to predict when they would have a BM after taking a medication and a lack of side effects, particularly those experienced with laxative use (e.g., urgency, cramping). While improvement in abdominal symptoms was also deemed important, patients indicated that these symptoms would likely resolve if they had more regular, complete BMs.

Conclusion: Predictable symptom relief is important to CC patients and should be considered in evaluating new treatment options for CC to inform treatment decisions and manage expectations by physicians and patients. It is also important to link the concept of predictability to treatment benefit, because predictability is desirable to patients only in this context. (Study was sponsored by Forest Laboratories, Inc., and Ironwood Pharmaceuticals, Inc.)

Disclosure - Robyn T. Carson: employee of Forest Research Institute and owns stock/stock options in Forest Laboratories, Inc.; Brooke Dennee-Sommers: former employee of Ironwood Pharmaceuticals, Inc., owns stock/stock options in Ironwood Pharmaceuticals, Inc., and current employee of Endpoint Outcomes, whose consultancy services are funded by Ironwood Pharmaceuticals, Inc.; Claire M. Ervin and Sheri Fehnel: employees of RTI Health Solutions, which is a consultancy whose activities related to the project are funded by Forest Research Institute.

This research was supported by an industry grant from Forest Laboratories, Inc., and Ironwood Pharmaceuticals, Inc., were involved in the study design; collection, analysis and data interpretation; and decision to submit these data for presentation. Study was sponsored by Forest Laboratories, Inc., and Ironwood Pharmaceuticals, Inc.

[1592] Table 1. Desired aspects of predictability reported spontaneously by ≥5 CC patients

Concept	Round 1 n=8	Round 2 n=8	Total N=16
Effectiveness			
More frequent BMs, }"regularity}"	7	7	14
Relief or prevention of abdominal symptoms (due to more frequent BMs)	4	4	8
Produce BM within expected timeframe (after taking medication)	5	2	7
Side effects			
No abdominal problems (cramping, bloating)	3	2	5
No urgency	2	3	5

1593

Adequacy and Findings of Digital Rectal Examination for Prostate Cancer Screening at the Time of Colonoscopy

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Purpose: Colonoscopy has become the preferred screening option for colorectal cancer (CRC) prevention in the United States. Colonoscopy is recommended as a CRC screening option for patients over the age of 50. The male component of this population is also at risk for prostate cancer and digital rectal examination (DRE) has been advocated as a possible tool for early detection. There is no published literature regarding the adequacy of prostate gland palpation and rate of prostate abnormalities detected at colonoscopy. Our aim was to evaluate the adequacy and findings associated with prostate examination at the time of colonoscopy.

Methods: All male patients over the age of 50 years undergoing colonoscopy at University of Utah Hospital and Clinics between February 1, 2013 and May 31, 2013 were included in the study. Endoscopists were taught how to record findings of their DRE in the endoscopy reporting software in a standardized manner. The primary endpoints of the study were: prostate nodule(s), gross degree of prostate asymmetry, and a hard prostate - features associated with the presence of prostate neoplasia. These findings were ascertained through a retrospective review of colonoscopy reports at the end of the study period.

Results: There were 376 unique patients who met the inclusion criteria. A DRE was performed and recorded on 359 patients (95.5%). The primary endpoints were recorded in the following numbers: nodule(s) 2 (0.56%), gross prostate asymmetry 4 (1.11%) and hard prostate 3 (0.84%). In total, 9 patients met the primary endpoint (2.5%). In addition, other secondary findings included: rectal mass (3, 0.84%), absent prostate (5, 1.40%), and enlarged prostate (36, 10.03%).

Conclusion: With the increasing use of colonoscopy for CRC prevention, gastroenterologists have the opportunity to detect abnormalities in the prostate during DRE. DRE is a standard procedure prior to colonoscopy to allow lubrication of the anal canal and palpate for anal/rectal tumors. Our study suggests that endoscopists can adequately assess and record prostate examination during colonoscopy. We also found that nearly 3% of patients had abnormal prostate findings that can be associated with prostate neoplasia and required further urological evaluation. Colonoscopy may provide a convenient time to palpate the prostate gland without patient discomfort and therefore serve the concurrent function of prostate cancer screening in parallel to colorectal cancer screening.

1594

Influence of Marijuana on Severity and Outcome of Acute Pancreatitis

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Purpose: There are multiple case reports in literature where marijuana has caused Acute Pancreatitis (AP) independently. However, experimental studies in mice reflect a conflicting data. Some studies have shown that pretreatment with anandamide, an endogenous cannabinoid increases the severity of AP and cannabinoids receptor antagonists were shown to prolong the survival of rats. While, Michalski et al showed that administration of HU210 a synthetic agonist of cannabinoid CB1 and CB2 receptors exhibits some therapeutic effects in experimental and clinical acute pancreatitis. A study from National Surveys on Drug Use and Health (NSDUH) in non-institutionalized patients showed that lifetime risk of developing acute pancreatitis increases with use of marijuana and it was directly related to duration of use of it. Purpose of this study is to determine whether there exists a relationship between AP severity and outcome in patients with marijuana use.

Methods: We retrospectively reviewed electronic medical records of adult patients who were admitted in the Medical Center of Central Georgia with principle diagnosis of AP from Sept 2007 to Nov 2012. We compared the severity of acute pancreatitis in patients with and without marijuana use by using Balthazar CT scan Index if CT scan was performed within 48 hrs of admission. We also evaluated if patients with marijuana use suffered worse outcomes than the patients without marijuana use. Outcomes were defined by hospital length of stay >7 days, need for ICU management, surgical intervention and mortality. Statistical analysis was performed using SAS version 9.3 (SAS Institute, Cary, NC). Variables were analyzed using the Chi-Square test.

Results: Total 591 patients were admitted with diagnosis of acute pancreatitis and 45 were positive for marijuana use. 25 patients did not undergo CT scan of abdomen so Balthazar grade could not be assessed in them. Balthazar Grading Index was not significant statistically between the two groups(p=0.72). Patient with marijuana use tend to have low number of week stay in the hospital than patients without marijuana use (p=0.07). No patient expired in marijuana use patient versus 7 (1.28%) patients in non marijuana use but it was not statistically significant (p=0.44).

Conclusion: Patient with acute pancreatitis who use marijuana tend to have lesser number of a week stay in hospital than patient without marijuana use.

[1594] Comparison of outcome and severity of pancreatitis in patient with and without marijuana use

Variable	Yes (N=45) N (%)	No (N=546) N (%)	P-value
Hospital Stay			0.07
7 days	37 (82.22)	379 (69.41)	
> 7 days	8 (17.78)	167 (30.59)	
ICU Care			0.12
Yes	1 (2.22)	48 (8.79)	
No	44 (97.78)	498 (91.21)	
Surgical Intervention			0.10
Yes	3 (6.67)	87 (15.93)	
No	42 (93.33)	459 (84.07)	
Expired			0.44
Yes	0 (0.00)	7 (1.28)	
No	45 (100.00)	539 (98.72)	
Balthazar Grade[a]			0.72
A	21 (47.73)	217 (41.57)	
B	12 (27.27)	129 (24.71)	
C	8 (18.18)	103 (19.73)	
D	2 (4.55)	51 (9.77)	
E	1 (2.27)	22 (4.21)	

[a]CT Scan not performed on 25 patients so Balthazar Grade not reported.

1595

Rate and Predictors of Possible Missed Esophageal and Gastric Cancers after Esophagogastroduodenoscopy in the United States

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Purpose: Little is known about missed rates of upper gastrointestinal cancer in the United States. Most data from Japanese centers suggested high missed rates over 20%. A recent study of 28,000 patients who underwent esophagogastroduodenoscopy (EGD) at a hospital-based endoscopy unit in Perth, Western Australia, reported a missed rate of up to 6.7%, paralleling colonoscopy. We aimed to study the rate and predictors of possible missed esophageal and gastric cancers after EGD in the United States.

Methods: Using the random 5% sample of Medicare beneficiaries in the Surveillance, Epidemiology and End Results Medicare linked database, we identified all patients diagnosed with esophageal or gastric cancer during 2000-2007. We excluded Medicare HMO enrollees and patients without Part B coverage within 36 months prior to cancer diagnosis. EGD performed within 36 months prior to cancer diagnosis was identified using the Current Procedure Terminology codes. Patients diagnosed with achalasia or Barrett's esophagus or had more than 2 EGDs performed were excluded. Cancers diagnosed 6 to 36 months after EGD were defined as possible missed cancers. The chi-square test and the multivariate logistic model were used in statistical analysis.

Results: Of the 751 patients diagnosed with esophageal or gastric cancer, 52 patients (6.9%) were diagnosed 6 to 36 months after EGD and possible missed. The rate of possible missed cancers differed by endoscopist specialty: 5.5% (31 out of 568) for gastroenterologists vs. 11.5% (21 out of 183) for non-gastroenterologists (p<0.01). The rate of possible missed cancers was similar between esophagus (16 out of 259, 6.2%) and stomach (36 out of 492, 7.3%). In the multivariate logistic regression controlling for patient age, sex, race, and cancer site (esophagus vs. stomach), endoscopist specialty (gastroenterologists vs. non-gastroenterologists: odds ratio [OR] 0.457, 95% confidence

interval [CI]: 0.252-0.828) and procedure setting (inpatient vs. outpatient: OR 0.532, 95% CI 0.284-0.997) were significantly associated with possible missed cancers. None of the other explanatory variables were significant. Sensitivity analyses using alternative time periods to define possible missed cancers or limited to outpatient EGDs led to similar results.
Conclusion: The rate of possible missed esophageal or gastric cancers after EGD parallels colonoscopy among Medicare patients in the United States. Compared to EGD performed by non-gastroenterologists, EGD performed by gastroenterologists was associated with a smaller likelihood of possible missed cancers.

1596

Weekday versus Weekend Admissions for Upper Gastrointestinal Bleeding: Is There a True Difference in Patient Outcomes? A Meta-analysis

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Purpose: Patient outcomes from weekend admissions and procedures have increased morbidity and mortality in a variety of different specialties, known as the "weekend" effect. Upper gastrointestinal bleeding (UGIB) is a serious condition that accounts for large number of hospitalizations each year around the world. Multiple studies have been performed comparing outcomes on patients with UGIB admitted on weekends versus weekdays with various results. Therefore, we performed a meta-analysis on the outcomes of weekend versus weekday admissions for UGIB.
Methods: A comprehensive search of PubMed/MEDLINE, Scopus, and Cochrane databases was performed (November 2012). All studies (cross-sectional, prospective, and retrospective) comparing weekend to weekday outcomes in patients with UGIB were included. Two authors independently extracted data. Meta-analysis was performed using fixed and random effects models with odds ratio (OR) or mean difference (MD) to assess for mortality, need for surgery, length of stay, time to endoscopy, and endoscopy on admission day. Publication bias was assessed using funnel plots. Heterogeneity was assessed by calculating the I2 measure of inconsistency. RevMan 5.1 was utilized for statistical analysis.
Results: Eleven studies met the inclusion criteria (N=870,374). Patients admitted on the weekend for UGIB experienced a statistically significant increase in mortality (OR 1.13; 95% CI: 1.06-1.20, p<0.01), need for surgery (OR 2.46; 95% CI: 1.51-3.99, p<0.01), and time to endoscopy (MD 2.68; 95% CI: 0.17-5.20, p=0.04) as compared to weekday admissions. Furthermore, weekend admissions for UGIB demonstrated a statistically significant reduction in endoscopy on day of admission (OR 0.72; 95% CI: 0.62-0.85, p<0.01). No statistically significant difference was noted for length of hospital stay (p=0.15) between the two groups.
Conclusion: Patients admitted on weekends with UGIB are more likely to have poorer outcomes than patients admitted during weekdays. Therefore, future policies are necessary to help reduce or eliminate such discrepancies between weekend and weekday admissions for UGIB.

1597

Improving Care Access for New Patients in an Outpatient Gastroenterology Clinic: A Novel Approach

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Purpose: Access to subspecialty clinics is an extremely important healthcare issue for patient care, referring physicians, and downstream revenue. Over the past two years, our institution, like many others, has struggled with supplying optimal access to new patients. Therefore, a quality initiative was undertaken by the Division of Gastroenterology at the University of Missouri-Columbia (MU-GI) to meet a goal of >70% of new patients to be scheduled within 10 days.
Methods: A prospective quality improvement initiative was conducted from December 2012 to April 2013. All new patients referred to our outpatient GI clinics were monitored and recorded. Data from before December 2012 was retrospectively evaluated. A quality initiative was implemented by a new Director of Ambulatory Services (December 2012). In December 2012, a supply-demand analysis was performed. On December 5, an educational session to faculty and fellows regarding prolonged access times and adoption of an open access clinic model were performed. On December 26, a policy was created and implemented with all Patient Service Representatives (PSRs) to notify Director of Ambulatory Services if any new patient referred to MU-GI cannot be scheduled within 10 days. If a new patient cannot be seen within 10 days, one of three options was initiated which included: Referred provider to overbook their clinic, Director of Ambulatory Services to overbook his clinic, or the Director create a special clinic outside of normal clinic time to see the patient. In January 2013, an open access model was adopted and initiated at MU-GI. The number of new patients seen within 10 days and number of total new patients were recorded as percentage of new patients seen within 10 days with a goal of >70% being established and statistically compared using Fisher's exact test.
Results: From October 2011 to November 2012, a total of 2,478 patients were referred to MU-GI with 871 being seen within 10 days (35.1%) with the best being 47.7% in August 2012. After initiation of the quality improvement initiatives from January to April 2013, 726 of 938 (77.4%) referred patients were seen within 10 days which was a statistically significant increase from earlier (p<0.01). During this time, new patient access was improved ever month compared to baseline (79.9%, 87.6%, 90.6%, and 83.5%).
Conclusion: New patient access to subspecialty clinics can be improved with simple initiatives, staff education, and improved teamwork. This successful model may be used to meet the current and future new patient demand in GI and other subspecialty clinics.

1598

Effects of Racial Variation on the Distribution of Demographics, Body Mass, and Medical Co-morbidities in Morbid Obesity: An Analysis of 83,059 Patients from the BOLD Database

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Purpose: Every clinical clue can be important in managing the morbidly obese. However, variations between racial groups in the distribution of weight-related problems have not been investigated completely. The purpose of this study was to evaluate differences in the manifestation of morbid obesity co-morbidities between the racial classifications listed in BOLD.
Methods: Data from 83,059 patients in the Surgical Review Corporation's BOLD database who were about to undergo laparoscopic Roux-en-Y gastric bypass was analyzed in five groups: African-American (n=9,055), Caucasian (n=63,352), Hispanic (n=6,893), Asian (n=198), and Other (Pacific Islander, Native American, or >1 race listed in BOLD; n=3,561). Age, weight and body mass index (BMI) were compared by analysis of variance. Dichotomous variable distribution was assessed by the Chi-squared equation.
Results: See Table.
Conclusion: Weight-related medical problems were frequent, regardless of race. However, distribution of obesity co-morbidities varied significantly between African-American, Caucasian, Hispanic, Asian, and Other race patients. African-Americans had the highest BMI and rates of asthma and sleep apnea. The mechanism underlying a higher female/male % among African-Americans was not clear from the data. Asians and African-Americans had hypertension most frequently. Diabetes was highest among Asians. Ischemic heart disease, cholelithiasis, GERD, liver disease, somatic complaints, and depression were most prevalent among Caucasians. Age was highest for Hispanics. Conversely, Hispanic hypertension, sleep apnea and other co-morbidities were lower than other races. Clinically significant racial differences in weight-related medical problems should be incorporated into the clinical acumen of managing morbidly obese patients. Heightened index of suspicion for these racial variations could help improve medical care for these fragile patients.

[1598] Distribution of obesity co-morbidities by race

Results:	African-American	Caucasian	Hispanic	Asian	Other	P value
Age	43±10	47±8	48±8	46±8	47±8	<0.0001
BMI	50±9	47±8	48±8	46±8	47±8	<0.0001
Sex (F/M %)	86/14	78/22	78/22	73/27	81/19	<0.0001
Hypertension	65.46%	61.18%	50.18%	65.66%	53.27%	<0.0001
Hyperlipidemia	30.86%	46.87%	31.37%	52.02%	36.06%	<0.0001
Diabetes	35.94%	39.52%	38.1%	52.02%	37.01%	<0.0001
Ischemic Heart Disease	3.03%	4.87%	2.74%	1.52%	2.64%	<0.0001
Sleep Apnea	45.81%	44.41%	40.5%	45.45%	39.12%	<0.0001
Cholelithiasis	14.46%	23.16%	18.89%	12.12%	17.13%	<0.0001
GERD	43.43%	52.15%	39.78%	35.35%	42.94%	<0.0001
Asthma	19.45%	18.87%	16.52%	13.64%	18.79%	<0.0001
Liver Disease	3.96%	7.79%	6.69%	6.57%	5.56%	<0.001
Depression	22.96%	40.63%	23.79%	24.24%	26.31%	<0.0001
Back Pain	44.01%	52.09%	42.01%	42.93%	41.03%	<0.0001
Musculoskeletal Pain	41.06%	48.98%	33.92%	35.86%	39.34%	<0.0001

1599

Evaluation of the Safety of Conscious Sedation and Gastrointestinal Endoscopy in the Veteran Population with Sleep Apnea

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Purpose: Obstructive sleep apnea (OSA) has been described to affect up to 26% of the general population and is an increasingly common disorder among the veteran population. Patients with OSA are considered to be high risk for endoscopy with sedation secondary to a presumed elevated risk of cardiopulmonary complications. Given the concern for increased risk, these patients are sometimes denied endoscopy or endoscopy is performed contingent upon patient admission thereby increasing the cost of healthcare. This presumption is rather unsubstantiated as the current literature lacks prospective randomized trials. The aim of the present study is to evaluate the safety of conscious sedation in patients with OSA undergoing gastrointestinal endoscopy via chart review of cardiopulmonary variables collected prospectively.

Methods: After IRB approval, a total of 125 consecutive patients with confirmed OSA by polysomnography scheduled to undergo gastrointestinal endoscopy were consented for the study. Patients with moderate and severe OSA were included while patients with mild OSA were excluded. Cardiopulmonary variables such as heart rate, blood pressure and level of blood oxygen saturation were recorded at 3-minute intervals throughout the endoscopic procedure. In addition, patients were continuously monitored by a registered nurse as well as the endoscopist. The necessity of endotracheal intubation, use of a reversal agent or the development of an adverse outcome was also documented.

Results: As expected in the veteran population, 118 (94.4%) of the patients were male and 7 (5.6%) were female. The average age was 59.5 years and the average BMI was 35.1. A total of 9 (7.2%; max. HR 141 bpm) patients experienced tachycardia (HR >100 bpm), while 10 (8.0%; min. HR 43 bpm) patients experienced bradycardia (HR <60 bpm). Hypotension (MAP <65 mmHg) occurred in 14 (11.2%; min. MAP 44 mmHg) patients. Blood oxygen desaturation (oxygen saturation <93%) was common and occurred in 46 (37.1%; min. O_2 saturation 89%) patients. None of the patients in the study required endotracheal intubation, pharmacologic reversal or experienced an adverse outcome as a result of changes in blood pressure, heart rate or blood oxygen saturation. Significant intraprocedural changes were noted to be transient and did not result in premature termination of any procedure.

Conclusion: Despite the presumed increased risk of cardiopulmonary complications, patients with OSA who undergo endoscopy have clinically insignificant variations in cardiopulmonary parameters similar to those previously described in the general population. Future studies should include larger cohorts with a control arm and consider comparing these outcomes with conscious sedation versus monitored anesthesia care.

1600

The Yield for Routine Stool and Colonic Tissue Studies in Hospitalized Patients with an Inflammatory Bowel Disease Exacerbation

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Purpose: Patients with inflammatory bowel disease (IBD) often have exacerbations. These events can be triggered by an underlying infection, which prompts the evaluation of multiple stool studies during an admission. The aim of this study was to assess the yield of stool and colonic tissue studies, and the role of repeated testing in patients with IBD who are hospitalized for an exacerbation of their disease.

Methods: We performed a retrospective cross-sectional study including patients, 18 years or older, with Crohn's disease (CD) or ulcerative colitis (UC) who were admitted to Jackson Memorial Hospital (Miami, FL) between January 2007 and January 2013 for a disease exacerbation. Variables considered were demographics, IBD phenotype, and results of the following stool studies: *Clostridium difficile* toxins (CDT), ova and parasites (O&P), stool cultures (SC), *Cryptococcal* studies, *Cryptosporidium* and *Giardia* antigen (Ag), as well as cytomegalovirus (CMV) and herpes simplex virus (HSV) stains and viral cultures (VC) from colonic tissue biopsies. Coefficients of determination were used to study the association between number of samples done and the yield for positive tests.

Results: 403 admissions for IBD exacerbations were reviewed for 192 patients. Baseline characteristics of IBD patients are shown in Table 1. Results of the yield of stool studies, and tissues stains and cultures are found in Table 2. All five patients with positive CDT were men, which was statistically significant (p=0.03). There was no association between the consecutive number of CDT samples analyzed and the yield for a positive result (r-squared=0.2, p=0.24) and 4 out of 5 of the positive CDT were done within 3 days of admission.

Conclusion: The yield for both stool and colonic tissue studies commonly used in patients admitted for an IBD exacerbation was low, especially when the test was done after 3 days of admission. Repeated testing did not demonstrate an increase in positive yield. Larger prospective cohort studies identifying those variables that can better demonstrate who will benefit from repeated stool and tissue testing are needed. Investigation into systems-based reasons for lack of execution of physician-ordered tests is warranted, with the potential for shorter hospital stays and lower health costs.

[1600] Baseline characteristics

Demographics	
Female (n, %)	89 (46.4)
Age (mean, SD)	37.0 (15.4)
White race (n, %)	132 (68.8)
Hispanic (n, %)	106 (55.2)
Body mass index (mean, SD)	23.6 (4.9)
Diagnosis of CD	109 (56.8)
Phenotype of IBD	
Previous History of Surgery (n, %)	60 (31.3)
Ileal CD (n, %)	26 (23.9)
Ileo-colonic CD (n, %)	44 (40.4)
Colonic CD (n, %)	29 (26.6)
Penetrating CD (n, %)	35 (32.1)
Proctocolitis UC (n, %)	7 (8.4)
Left-sided colitis UC (n, %)	33 (39.8)
Pancolitis UC (n, %)	36 (43.4)
Extraintestinal manifestations (n, %)	15 (7.8)

[1600] Results for stool and colonic tissue studies

Stool analysis	Ordered (n)	Performed (n, %)	Positive Results (n, %)
CDT	165	129 (78.2)	5 (3.9)
O&P	145	120 (84.5)	0 (0.0)
SC	154	118 (76.6)	1 (0.8)
Cryptococcal Study	2	1 (50)	0 (0.0)
Cryptosporidum Ag	12	10 (83.3)	0 (0.0)
Giardia Ag	13	10 (76.9)	0 (0.0)
Biopsy Analysis		55 (13.6)	
CMV Stain	13 (23.6%)	12 (92.3)	0 (0.0)
HSV Stain	7 (12.7%)	7 (100)	0 (0.0)
VC	10 (18.2%)	9 (90)	0 (0.0)

1601

Video Capsule Endoscopy after Bariatric and Gastric Surgery: Oral Ingestion is Associated with Satisfactory Completion Rate and Rapid Gastric Passage

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Purpose: To investigate our experience with oral ingestion and endoscopic placement of video capsule endoscopy (VCE) in patients with previous bariatric and gastric surgery.

Methods: We performed a retrospective review of all VCE at our institution over a 3 year period (April 2010-March 2013) and patients with prior bariatric or gastric surgery were identified. Demographic data and information regarding the VCE delivery method and outcomes were collected. Count, percentage, and exact 95% binomial confidence intervals (CI) were used to summarize study completion. Median and inter-quartile range (IQR) were used to summarize transit times.

Results: VCE was performed on 624 patients during the selected time period. We identified 23 patients with previous bariatric and gastric surgery (13 Roux-en-y gastric bypass, 3 unspecified gastric bypass, 3 Whipple procedure, 2 Billroth I, 2 Billroth II) that received 24 VCE. Oral ingestion of VCE occurred in 16 (66.6%) procedures. Endoscopic deployment occurred in 8 (33.3%) procedures; the indication for this modality was the surgical history in 6 cases and unspecified in 2 cases. Thirteen of 16 (81.3%, 95% CI 54-96%) VCE with oral ingestion were completed to the colon. Five of 8 (62.5%, 95% CI 24-91%) VCE with endoscopic deployment were completed. After oral ingestion, median gastric transit time was < 1 min (IQR <1–99). Notably, 10 (62.5%) patients had gastric transit time of 2 minutes or less. Median total bowel transit time was 291 min (IQR 213–434) with oral ingestion and median total bowel transit time was 364 min (IQR 233– >440) with endoscopic deployment. There were no incidences of VCE retention in either cohort. The ingestion cohort had a higher proportion of female patients as well as patients with a medical history of diabetes, previous small bowel surgery and bowel obstructions. Other demographics were

[1601]

Method of capsule delivery	VCE (n)	Completed exams, n (%) [95% CI]	Gastric transit time, minutes median (IQR)	Total bowel transit time, minutes median (IQR)
Ingestion	16	13 (81%) [54–96%]	< 1 (< 1–99)	291 (213–434)
Endoscopic deployment	8	5 (63%) [24–91%]	NA	364 (233–> 440)

similar. The endoscopic deployment cohort had a higher proportion of inpatient VCE and poor bowel preparations. The indications for VCE and clinical findings were similar.

Conclusion: Capsule endoscopy can be successfully completed in patients with bariatric and gastric surgery by standard oral ingestion. Importantly, capsule ingestion was followed by rapid gastric passage in the majority of VCE. These findings are in contrast with the current published literature (one case series with four patients and 0% completion rate). We observed a lower completion rate and longer total bowel transit time after endoscopic deployment, although sample size limits meaningful statistical comparison.

1602

Endoscopy Utilization in Veterans with Newly Diagnosed PTSD

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Purpose: Veterans with post-traumatic stress disorder (PTSD) are subject to high rates of various types of medical utilization; however it is not clear if there are patterns of comorbid illness that could explain some of these relationships. Pursuing this line of inquiry we examined if the receipt of an endoscopic procedure in young, recently enrolled veterans with PTSD revealed specific patterns of comorbidity.

Methods: Using a retrospective cohort design we studied a national sample of new veteran enrollees aged 18-40 years (n=163,695) from 2006-2009. The receipt of an endoscopic procedure was defined using CPT codes for anoscopy, colonoscopy, upper endoscopy, capsule and hepatobiliary endoscopy. PTSD was defined using the diagnostic code of 309.81 present at least once on prior outpatient encounter. Associations were examined between PTSD, receipt of an endoscopic procedure; comorbid medical conditions (e.g., abdominal pain, gastroenteral condition); and, measures of healthcare utilization (e.g., primary care, ER, and mental health visits). Analyses used sequential multivariable generalized linear mixed models to examine the independent relationship between PTSD and endoscopy utilization. Analyses also evaluated the probability of receiving an endoscopy per day before and after recognition of a PTSD diagnosis.

Results: Among the full cohort, 2.6% (n=4,320) received at least one endoscopic procedure. PTSD was identified in 15.0% (n=24,548) of the cohort and 6% (n=1,453) of veterans with PTSD received at least one endoscopy compared with 2% (n=2,867) of veterans without PTSD (P<.0001). In sequential modeling, comorbid factors explaining the relationship between endoscopy and PTSD were cardiac conditions (odds ratio [OR] 2.48; P<.001), abdominal pain (OR 2.90; P<.0001), and gastrointestinal disorders (OR 19.3; P<.0001). Associations were also strong for high neoplasms (OR 2.65; P<.0001) and coagulopathic disorders (OR 2.14; P<.0001). Despite adjustments for these medical/psychiatric conditions, and medical visits, PTSD retained a substantial association with the receipt of an endoscopic procedure (OR 1.32; P<.0001). Of the veterans receiving an endoscopy, most (77%) received it after a PTSD diagnosis however per day of VHA enrollment veterans were two times more likely to have an endoscopy done before their PTSD diagnosis (OR 0.0038 versus 0.0019; P<0.05).

Conclusion: PTSD was associated with a 32% increase in the receipt of an endoscopy and the probability of getting an endoscopy per day was two-fold higher prior to the recognition of PTSD. In young veterans with medical complaints of abdominal pain and gastrointestinal conditions, practitioners' should be carefully screening for the presence of PTSD prior to referring for more invasive diagnostic procedures.

1603

Healthcare Resource Utilization and Costs of Newly Treated GERD Patients Initiating Therapy with Dexlansoprazole and Esomeprazole in the United States

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Purpose: To describe the healthcare resource utilization and costs of newly treated patients with gastroesophageal reflux disease (GERD) who are initiating treatment with dexlansoprazole (DEX) or esomeprazole (ESO).

Methods: Adults with at least one prescription claim for DEX or ESO between 1/1/2009 and 12/31/2010 (index event), ≥12 months of pre- and post-index continuous health plan and pharmacy benefit enrollment, and a diagnosis of GERD on ≥1 inpatient or non-diagnostic outpatient medical claim (ICD-9-CM 530.10, 530.11, 530.12, 530.13, 530.19, 530.81,787.1x) in the pre- or post-index period were identified from the linked MarketScan and GE Centricity research databases. Patients with PPI or H2RA treatment in the pre-index period were excluded, as were those with an indication of pregnancy at any time during the study period. Total all-cause and GERD-related utilization and costs in the 12-month post-index period were calculated. Generalized linear modeling was used to estimate adjusted costs for the two groups, controlling for differences in demographic (i.e., age, sex, region) and clinical characteristics (e.g., pre-index comorbid burden, GERD diagnosis and GERD-related comorbidities, and index dose level).

Results: 965 and 4,749 newly treated patients initiating therapy with DEX (age = 49.0±13.0; 67.2% female) and ESO (age = 50.7±13.4; 64.1% female), respectively, were identified. Patients treated with DEX had a lower mean Charlson Comorbidity Index score than patients treated with ESO (0.5±1.0 vs. 0.6±1.2; p<0.0129). Total unadjusted all-cause costs during the post-index period of patients treated with DEX ($14,501±$24,884) were significantly lower (p<0.0002) than those of patients treated with ESO ($16,931±$34,295). The adjusted total annual mean cost in the DEX group was $7,710 compared to $8,094 for the ESO group. Total GERD-attributable costs in the post-index period were also lower for patients treated with DEX ($1,086±$1,808) (p<0.0001) than for those treated with ESO ($1,225±$1,763). Adjusted GERD-attributable annual mean cost was $380 for patients treated with DEX vs $441 for those treated with ESO. Differences in total all-cause costs between DEX and ESO groups can be attributed to differences in the costs of outpatient services ($8,876±$13,956 vs. $9,509±$17,564; p<0.0001) and outpatient pharmacy claims ($2,886±$3,990 vs. $3,370±6,732; p<0.0001), whereas the differences in GERD-related costs are largely attributable to differences in the costs of outpatient pharmacy claims ($613±$622 vs. $832±$847; p<0.0001).

Conclusion: The one-year post-index healthcare costs of newly treated GERD patients initiating therapy with DEX were lower than those of patients initiating treatment with ESO.

Disclosure - This research was funded by Takeda Pharmaceuticals International, Inc., which markets dexlansoprazole. Reema Mody - Employee of Takeda Pharmaceuticals International, Inc. Emily Durden, Lorena Lopez-Gonzalez, and David Smith - Research consultants to Takeda Pharmaceuticals International, Inc.

1604

August 2012 *E. coli* O157:H7 Outbreak in Livingston County, New York: A Report of the Presenting Symptoms and Diverse Clinical Courses

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Purpose: The purpose of this study is to describe the August 2012 *E. coli* O157:H7 outbreak in Livingston County, New York, including a detailed account of the presenting symptoms and varied clinical course of affected patients. By highlighting this outbreak, we seek to remind clinicians that *E. coli* O157:H7 infection needs to be on their list of possible etiologies when evaluating a patient with bloody diarrhea (and refrain from prescribing antibiotics until it has been ruled out).

Methods: In August of 2012, the Livingston County Department of Health used the *E. coli* O157 and Shiga-Toxin Related Disease Questionnaire to collect information about presenting symptoms, clinical course, food consumption, and environmental exposures from patients who had a New York State Public Health Laboratory-confirmed positive stool culture for *E. coli* O157:H7.

Results: In this *E. coli* O157:H7 outbreak, which involved 10 patients, the earliest and latest date of symptom onset was August 6th and 28th, 2012, respectively. Of note, every patient experienced abdominal cramps and almost all patients (90%) presented with diarrhea, which was invariably bloody. Fever was absent in all patients. Tables 1 and 2 highlight treatments and disease courses, respectively. Seven out of 10 patients were treated with an antibiotic. A majority of patients were hospitalized. Disease severity ranged from a mild colitis, which required no medical intervention, to acute renal failure, caused by the hemolytic uremic syndrome (HUS), resulting in altered mental status and seizures and necessitating hemodialysis and plasma exchange. Each patient's stool culture tested positive for Shiga toxin DNA type 2. Despite obtaining a thorough food and environmental exposure history from each patient, as well as testing suspected food and water sources for contamination, the source of this outbreak was not identified.

Conclusion: In addition to *E. coli* O157:H7, several other bacterial pathogens, including *Shigella*, *Salmonella*, and *Campylobacter*, can result in colitis that is soon followed by bloody diarrhea. Cases of inflammatory bowel disease may also present with bloody diarrhea although its onset is usually more subacute. Thus, clinicians must consider a broad list of possible etiologies when evaluating a patient with bloody diarrhea as treatment varies widely based upon the underlying etiology and can precipitate HUS if antibiotics are given to a patient infected with *E. coli* O157:H7.

[1604] Table 1. E. coli O157:H7 outbreak—treatments

Treatment	Number of Patients Treated (%)[a]
Antibiotics	
Within 4 weeks of becoming ill	1 (10%)
Current illness	7 (70%)
Antacids within 4 weeks of becoming ill	0
Antidiarrheals	3 (30%)
Hemodialysis	1 (10%)
Plasma exchange	1 (10%)

[a]N=10

[1604] Table 2. E. coli O157:H7 outbreak—disease courses

Symptom Duration or Outcome[a]	
Diarrhea (mean number of days)	5 (range 3-8 days)
Hospitalization	
Number of patients	6 (60%)
Length of hospital stay	
<3 days	0
≥3 days	6 (100%)
HUS	2 (20%)
Altered mental status	1 (10%)
Seizures	1 (10%)
Surgery	0
Death	0

[a]N=10

1605

Are Telephone Reminders Helpful in Improving Outpatient Colonoscopy Attendance?

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Purpose: Non-attendance at endoscopy units is a challenging problem. It results in suboptimal utilization of medical resources and potentially a delay in diagnosis. Aim of this study was to determine whether a telephone reminder successfully leads to improvement in attendance at endoscopy units or not.
Methods: We conducted a retrospective review of health records of 890 patients who were scheduled for outpatient colonoscopy at the Detroit VA Medical Center in separate time periods of 2009 and 2011. Different variables were collected including demographics, indications, day of procedure, preceding holiday, reminder call, attendance, and quality of bowel preparation. These patients were then subdivided into groups depending on whether they were reached by phone, voicemail was left, no voicemail could be left, or no reminder call was attempted.
Results: 678 patients received a reminder by either direct communication from the caller or by voicemail (group 1) while the rest of 212 patients did not receive either reminder call or voicemail (group 2). No significant difference was observed for attendance rate between both groups (89.1 vs 85.4, p=0.14). No significant difference in results was observed with intention to call analysis. Higher no-show rate was found among African Americans (17.0%) compared to Caucasians (5.7%, p<0.001). Quality of bowel preparation remained comparable between both groups (good or excellent: 80.2% vs 77.8%, p=0.47). We did not notice any effect of race, day of procedure or prior holiday on quality of bowel preparation.
Conclusion: Our study did not find telephone reminders as an effective tool to improve attendance rate or quality of bowel preparation at outpatient colonoscopy unit. We observed a significantly lower attendance rate among African American as compared to Caucasian population.

1606

Patient Assessments and Online Ratings of Quality Care: A Cross-comparison of Multiple Physician Evaluation Websites

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Purpose: Physician evaluation websites (PEWs) are a critical part of the expanding universe of online reviews and serve as an important information resource for patients searching for new healthcare providers. Unfortunately, fear of negative anonymous feedback and the overwhelming number of PEWs prevent most physicians from harnessing the potential of these sites. This study compares the completeness, accuracy and reviews of 10 notable PEWs and will help physicians identify which sites are most relevant and deserving of their attention.
Methods: Sixteen nationally recognized gastroenterology clinical leaders, representing coast to coast diverse geographic regions of the U.S., were selected and searched within 10 of 11 websites that had been identified as noteworthy in a previous study. Angieslist.com was not studied as it requires a paid membership for access to reviews. Each site was assessed for completeness in physician listing, accuracy of published office contact information and number and quality of reviews. PEWs were cross compared on the basis of their size in number of unique visitors per month. The three largest websites were compared to identify any potential trends across reviews of specific providers.
Results: On average, each physician was listed on 70% of the PEWs. Of all sites searched, docspot.com, ucomparehealthcare.com and vitals.com listed the most physicians (>90%). Seventy-nine percent of office address listings and 77% of office phone listings were correct. Docspot.com was the most accurate for both addresses and phone numbers (>90%). The average physician had only 1.3 reviews on a typical website, with > 80% of reviews coming from just three websites, healthgrades.com, ucomparehealthcare.com and vitals.com. The majority of reviews were positive (p<0.0021). Websites with greater than 1 million unique visitors per month listed significantly more physicians than sites with fewer visitors (p<0.001). A positive correlation was also found between reviews on ucomparehealthcare.com and vitals.com (p=0.0007).
Conclusion: There is great variability between PEWs in terms of their completeness, accuracy and number of reviews. The PEWs that clearly stood out from the rest were docspot.com, healthgrades.com, ucomparehealthcare.com and vitals.com. Physicians with high scores on ucomparehealthcare.com are likely to be similarly scored on vitals.com and vice versa, suggesting possible reproducibility across multiple PEWs. Additional studies into this trend are needed. This research study will aid gastroenterologists in sorting through a confusing plethora of PEWs, thereby focusing physician attention on PEWs most likely to produce the greatest results in terms of improved website reference information accuracy and publicity.

1607

Validation of Automated Colonoscopic Findings from an Endoscopic Documentation Database (Provation) against Manually Collected Data

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Purpose: Many endoscopy units are now using computer-based endoscopic documentation software such as Provation (Wolters Kluwer, Minneapolis). Such software can generate sophisticated outcomes data on large numbers of patients automatically, resulting in a growing number of published studies based on endoscopic databases. However, no published study has yet validated endoscopic software data against manually collected data. To this end, we compared the colonoscopic findings reported by Provation against manually collected findings from two similar cohorts of patients in the same endoscopy unit.
Methods: In November 2011, our endoscopy unit switched from a dictation-based documentation system to the Provation system. As part of a long-term quality control initiative, we had collected data on 9,714 patients who had undergone elective colonoscopies from January 2010 to November 2011, using manual chart review involving a trained data abstractor. We compared these findings against those generated by Provation on 7,091 patients who underwent colonoscopy from November 2011 to March 2013.
Results: The Provation cohort was similar to the Manual cohort with regard to mean age (59.2 vs 58.8 years; p=0.31), gender distribution (49.5% male vs 48.3%; p=0.13), and indications (48.9% screening, 30.6% surveillance and 20.5% diagnostic vs 46.4%, 30.8% and 22.9% respectively; p=0.10). The incidence of poor bowel preparation was similar between the two groups, as were the percentages of patients with one or more large polyp(s) (≥1 cm) or mass lesion(s). However, the Manual cohort had a higher prevalence of diverticulosis and hemorrhoids, while the Provation cohort had a lower colonoscopy completion rate, and a higher prevalence of polyps of any size (Table). If we restrict our analysis to screening patients, the Manual cohort showed a polyp prevalence of 45.2%, large polyp prevalence of 7.1% and mass prevalence of 0.2%, while the Provation cohort had prevalences of 45.7%, 7.6% and 0.3% respectively (all p-values >0.05).
Conclusion: Data generated by Provation are slightly different from data from manual chart review, although the large polyp and mass prevalence are similar. If we consider manual collected chart review to be the "gold standard", this study partially validates the Provation data, but caution is advised when using endoscopic data for outcomes research.

[1607]

	Manual	Provation	P
Colonoscopy Completion	98.23%	98.73%	0.01
Poor Bowel Preparation	0.57%	0.41%	0.15
Polyp Prevalence	45.14%	49.82%	<0.001
Large Polyp Prevalence	9.77%	9.8%	0.95
Mass Prevalence	0.67%	0.69%	0.92
Diverticulosis	37.93%	31.35%	<0.001
Hemorrhoids	31.83%	29.41%	<0.001

1608

The Association between *Helicobacter pylori* Infection and Coronary Artery Disease: A Meta-analysis of Epidemiologic Evidence

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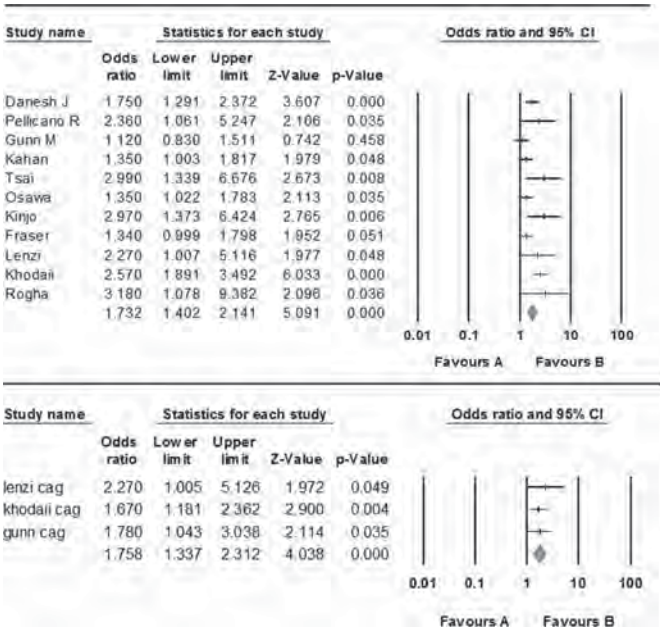
Purpose: There has been a conflicting evidence on the association between *Helicobacter pylori* (HP) infection and risk of coronary artery disease (CAD). We conducted a systemic review and meta-analysis to determine the association between HP and CAD.
Methods: Two reviewers independently conducted a systemic search on Medline, OvidSP and PubMed databases from January 1980 to March 2013 for studies on the association between HP and CAD. Search terms included '*Helicobacter pylori*' combined with 'coronary artery disease', 'ischemic heart disease', and 'myocardial infarction'. The eligible studies from search results were reviewed for additional references pertaining to the subject. There was no language restriction to our search criteria. Initially, a combined analysis including all studies was done, followed by a

subgroup analysis by CagA status. The preliminary analysis of the eligible studies showed some evidence of heterogeneity; therefore, all analyses were done using the random effects model. Publication bias was assessed by the Begg's and Egger's tests and inspection of funnel plot. All analyses were performed using Comprehensive Meta Analysis software.

Results: Eleven studies including 3,337 participants with HP infection and 3,445 with CAD were included in the analysis. The age range of participants was 23 to 88 years. Overall, HP increased the risk of CAD by 73% (RR 1.73, 95% CI: 1.40-2.14; P<0.001). The subgroup analysis by CagA status (3 studies) showed significant association with 76% increase in risk of CAD among individuals with CagA seropositivity (RR 1.76, 95% CI: 1.34-2.31). There was no evidence of publication bias observed with Begg and Mazumdar test and inspection of funnel plot.

Conclusion: In this meta-analysis, we found strong association between HP infection, notably CagA positive strains and the risk of CAD.



[1608]

1609

***Helicobacter pylori* Infection Is Not Associated with Lung Cancer: A Meta-analysis of Epidemiologic Evidence**

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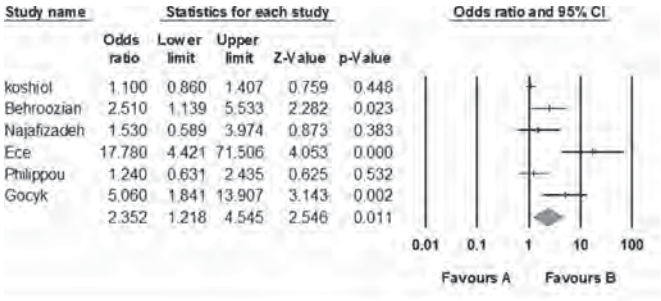
1. Wayne State University-Detroit Medical Center, Detroit, MI; 2. Indiana University Medical Center and Roudebush Veterans Administration Medical Center, Indianapolis, IN.

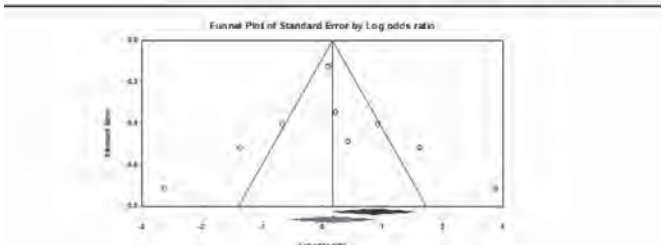
Purpose: Previously published studies showed conflicting results on the association between *Helicobacter pylori* (HP) infection and lung cancer. We conducted a meta-analysis and systemic review of all available studies with the aim to determine the association between HP and lung cancer and evaluate its magnitude and direction.

Methods: We conducted a systemic search on PubMed, Medline and OvidSP databases from January 1990 to March 2013 for published papers on the association between HP and lung cancer. Search terms included '*Helicobacter pylori*' combined with 'Lung cancer'. The eligible studies from search results were reviewed for additional references pertaining to the subjects. There was no language restriction to our search criteria. Initial analysis of all included studies showed evidence of heterogeneity; therefore, all analyses were done using the random effects model. Publication bias was assessed using the Begg's and Egger's tests and visual inspection of funnel plot. All analyses were performed using Comprehensive Meta Analysis software.

Results: Six studies consisting of 1,463 participants with HP infection and 967 with lung cancer were included in the analysis. The age range of participants was 16 to 82 years. Overall HP seropositivity was 77.87% in subjects with lung cancer; whereas 71.36% in those without lung cancer. On initial analysis, HP was found to be associated with lung cancer, RR 2.35 (95% CI 1.22-4.55; P=0.01) compared to controls. Begg and Mazumdar test and visual inspection of funnel plot showed evidence of publication bias. Duval and Tweedie's trim and fill was applied and the adjusted RR was 1.81 (95% CI 0.91-3.59).

Conclusion: Based on current epidemiological evidence we did not observe any significant association between *Helicobacter pylori* and lung cancer. Further well designed studies are required to assess this association.





[1609]

1610

Initial Fluid Resuscitation in Acute Pancreatitis: Does an Educational Intervention Help?

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Purpose: The importance of aggressive fluid resuscitation in the management of acute pancreatitis, particularly in the first 24 hours, is well established. This has been highlighted in guidelines published by major gastroenterology societies. Patients presenting to the hospital with acute pancreatitis are typically first seen by emergency room physicians. Gastroenterology consultation services are often not requested until after these critical initial hours have passed. At our institution, there was general consensus among the gastroenterologists that patients with acute pancreatitis did not receive adequate fluid resuscitation in the first 24 hours. We theorized that emergency room physicians, internists and medical and surgical residents were not aware of the guidelines for initial management of acute pancreatitis. Therefore, as part of a quality improvement project, we sought to determine whether education of initial medical providers would improve management of patients with acute pancreatitis, especially with regard to initial fluid resuscitation.

Methods: A lecture on acute pancreatitis with special emphasis on fluid resuscitation was prepared by the gastroenterology fellows. This lecture was presented on four separate occasions for the departments of emergency medicine, family medicine, internal medicine and surgery. A pre-post intervention study was then undertaken. We evaluated the amount of IV fluids administered to patients admitted through the emergency room with a diagnosis of acute pancreatitis during the three month periods before and after the educational intervention.

Results: In the pre-intervention group, the mean volume of fluid administered in the first 24 hours of admission was 2,827 mL, which is well below the recommended volume. The volume of fluid administered in the post-intervention group was significantly improved, with a mean volume of 4,202 mL administered in the first 24 hours (P=0.018).

Conclusion: We have shown through this quality improvement project that appropriate education of first contact physicians resulted in significant improvement in initial fluid resuscitation in patients admitted with acute pancreatitis. We believe that this simple intervention may result in improved initial management of acute pancreatitis in other institutions as well.

1611

"Low Risk" Blatchford and AIMS65 Scores Do Not Identify Patients Who Can Be Discharged from the Emergency Department

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Purpose: To assess if AIMS65 and Blatchford scores can identify patients presenting to the Emergency Department (ED) with "low risk" upper GI bleeding, defined as a Blatchford score ≤2 or AIMS65=0, who could be discharged.

Methods: Retrospective chart review (October 2009-September 2012) of patients presenting to the ED with upper GI bleeding, who were admitted and underwent esophagogastroduodenoscopy (EGD). Charts were reviewed for demographics, pertinent data necessary to calculate Blatchford and AIMS65 scores retrospectively. Outcomes were recorded including endoscopy findings, need for intervention, need for blood transfusion, Intensive Care Unit (ICU) admission, mortality, inpatient and 30-day rebleeding, and length of stay. Patients with cirrhosis, lower GI bleeding, or occult bleeding were excluded.

Results: 220 patients were identified. 112 (51%) patients were male. Mean age was 65 years old (Range 19-96). 72 (33%) patients were taking anticoagulants. The most common endoscopic finding was PUD (29.1%). 51 patients (23.2%) required endoscopic intervention. 20 patients (9.1%) had inpatient rebleeding and 32 (14.1%) had rebleeding within 30 days. 109 patients (49.5%) were admitted to ICU. 160 patients (72.7%) received a blood transfusion. Five patients (2.3%) died during hospitalization. The mean length of stay was 6.65 days (median 5). The mean Blatchford score was 9.38 (Range 0-18). The Blatchford score was significantly associated with the significant EGD findings (p=0.03), inpatient rebleeding (p=.01), ICU admission (p=0.00), and need for transfusion (p=0.00). 24 patients (10.9%) had a "low risk" Blatchford score. Although there were no deaths in this group, 4 (16.7%) required endoscopic therapy, 5 (20.8%) were admitted to the ICU, 2 (8.3%) received a blood transfusion, and 4 (16.7%) were readmitted within 30 days for rebleeding. The mean AIMS65 score was 1.29 (Range 0-4). The AIMS65 was significantly associated with inpatient rebleeding (p=0.04), ICU admission (p=0.00), mortality (p=0.02), and need for transfusion (p=0.00). 58 patients (26%) had a "low risk" AIMS65 score. No "low risk" patients died. However, 13 of these patients (22.4%) had endoscopic intervention, 14 (24.1%) were admitted to the ICU, 28 (48.3%) received a blood transfusion, and 5 (8.3%) were rebled within 30 days.

Conclusion: Although the Blatchford score and AIMS65 score correlate with several clinically significant outcomes, "low risk" Blatchford or AIMS65 scores could not accurately identify those patients who could be discharged from the ED, as a significant proportion of patients required endoscopic intervention, blood transfusion, ICU admission, or had rebleeding within 30 days.

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Miralax® and Gatorade® without Bisacodyl for Bowel Preparation: A Meta-analysis of Randomized Controlled Trials

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Purpose: Polyethylene glycol (PEG) is a commonly used bowel preparation for colonoscopy. Occasionally, patients are unable to tolerate the large volume of fluid ingestion required for this preparation or find PEG unpalatable. Miralax®-Gatorade® preparations have been increasingly studied as it is noted to be a lower volume and more easily tolerated bowel preparation. Results of studies have varied; therefore, we conducted a meta-analysis to assess the efficacy of the combination of Miralax® and Gatorade® without Bisacodyl versus PEG for bowel preparation prior to colonoscopy.

Methods: MEDLINE/PubMed, Embase, Cochrane databases, CINAHL, Scopus, and recent abstracts from major conference proceedings were searched (5/2013). Randomized controlled trials (RCTs) on adults comparing Miralax®-Gatorade® (238-255g in 64 ounces) without Bisacodyl versus PEG (4L) for bowel preparation prior to colonoscopy were included. The effects were analyzed by calculating pooled estimates of quality of bowel preparation (satisfactory, unsatisfactory, excellent), patient tolerance (nausea, willingness to repeat preparation), and polyp detection by using odds ratio (OR) with fixed and random effects models. Publication bias was assessed by funnel plots. Heterogeneity among studies was assessed by calculating I2 measure of inconsistency. RevMan 5.1 was utilized for statistical analysis.

Results: Five RCTs met inclusion criteria (N=927) with mean age ranging from 54.1-60.2 years. Miralax®-Gatorade® without Bisacodyl demonstrated a statistically significant increase in patients' willingness to repeat preparation (OR 8.62; 95% CI: 5.01-14.83, p<0.01). Furthermore, no statistically significant difference was observed between the Miralax®-Gatorade® without Bisacodyl preparation versus PEG for satisfactory (OR 0.97; 95% CI: 0.53-1.75, p=0.91), unsatisfactory (OR 1.03; 95% CI: 0.56-1.88, p=0.92), or excellent bowel preparations (OR 0.61; 95% CI: 0.14-2.60, p=0.50). Furthermore, no statistically significant difference was noted between the two groups for polyp detection (p=0.77), nausea (p=0.94), cramping (p=0.94), and bloating (p=0.51). No publication bias was noted.

Conclusion: Miralax® and Gatorade® without Bisacodyl for bowel preparation prior to colonoscopy showed no differences as compared to PEG in regards to bowel preparation scores, polyp detection, and adverse effects. However, patients were more willing to repeat preparation if the Miralax® and Gatorade® without Bisacodyl preparation was administered. Based on the results, the Miralax® and Gatorade® without Bisacodyl bowel preparation may be considered as an alternative to PEG for patients undergoing colonoscopy.

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Full-dose Miralax® with Gatorade® for Bowel Preparation: A Meta-analysis of Randomized Controlled Trials

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Purpose: Polyethylene glycol (PEG) is the most popular bowel preparation for colonoscopy. However, the large volume required in the standard preparation and salty taste results in reduced patient compliance. Recently, Miralax® (PEG without electrolytes) with Gatorade® has become popular both for its palatability and its lower volume. A number of randomized controlled trials comparing full-dose standard PEG with Miralax®-Gatorade® have been performed with mixed results. Therefore, we conducted a meta-analysis to evaluate the outcomes with full-dose Miralax®-Gatorade® versus full-dose PEG for bowel preparation prior to colonoscopy.

Methods: MEDLINE/PubMed, Embase, Cochrane databases, CINAHL, Scopus, and recent abstracts from major conference proceedings were searched (5/2013). Three randomized controlled trials (RCTs) on adults comparing full-dose Miralax®-Gatorade® (238-255g in 64 ounces) versus full-dose PEG (4L) for bowel preparation prior to colonoscopy were included. The effects were analyzed by calculating pooled estimates of quality of bowel preparation (satisfactory, unsatisfactory, excellent), patient tolerance (nausea, cramping, bloating), and polyp detection by using odds ratio (OR) with fixed and random effects models. Publication bias was assessed by funnel plots. Heterogeneity among studies was assessed by calculating I2 measure of inconsistency. RevMan 5.1 was utilized for statistical analysis.

Results: Four trials met inclusion criteria (N=1,021) with mean age ranging from 56.3-61.3 years. Full-dose Miralax®-Gatorade® preparation demonstrated a statistically significant increase in patients' willingness to repeat preparation (OR 8.14; 95% CI: 5.51-12.01, p<0.01) as compared to full-dose PEG. No statistically significant difference was observed between the two groups for satisfactory preparations (OR 1.19; 95% CI: 0.68-2.07, p=0.54), unsatisfactory preparations (OR 0.83; 95% CI: 0.48-1.46, p=0.53), or polyp detection (OR 1.04; 95% CI: 0.79-1.37, p=0.78). No publication bias was noted.

Conclusion: Full-dose Miralax®-Gatorade® preparation appears to be as efficacious as full-dose PEG but has increased patient satisfaction. Therefore, full-dose Miralax®-Gatorade® preparation may be used as an alternative to full-dose PEG for patients undergoing colonoscopy.

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Risk of Gastrointestinal Bleeding with Rivaroxaban: A Comparative Study with Warfarin, Results of a Multicenter Study

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Purpose: Rivaroxaban is the first oral direct factor Xa inhibitor that has been approved for the prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation and for the treatment and prophylaxis of thromboembolism events. The aim of our study was to assess the risk of GI bleeding with rivaroxaban as compared to warfarin in the community setting.

Methods: In this retrospective cohort study, we examined the medical records of all patients who were started on rivaroxaban or warfarin from April 2011 to April 2013. The study was conducted in two community hospitals. Demographic details, laboratory studies, concomitant use of antiplatelet agents or non-steroidal anti-inflammatory drugs (NSAIDs), duration of rivaroxaban and warfarin (≤ or >40 days) and GI bleeding events. GI bleeding was defined as any bleeding in the GI tract that required hospitalization. Inclusion criteria were patients who were on rivaroxaban for ≥4 days and compared to age and gender-matched patients who were on warfarin for ≥4 days. Exclusion criteria were unknown duration of rivaroxaban or warfarin, lack of follow up, age <18, pregnancy, mechanical valve replacement, advanced kidney disease.

Results: A total of 300 patients were identified of which 147 patients were on rivaroxaban (mean age 68.3±14.5 years) and 153 patients were on warfarin (mean age 71.4±13.1 years). The incidence of all GI bleeding in the rivaroxaban group occurred in 7 (4.8%) patients compared to the warfarin group which occurred in 15 (9.8%) patients (p=0.094). On therapeutic doses of rivaroxaban and warfarin, GI bleeding occurred in 8% and 9.8% of patients respectively. Multivariate analysis showed that patients who were on rivaroxaban for ≤40 days had a higher incidence of GI bleeding than those on it for >40 days (OR 2.8, p=0.023). Concomitant use of dual antiplatelet agents was associated with increased risk of GI bleeding in the rivaroxaban group (OR 7.4, p=0.0378). A history of previous GI bleeding was a risk factor for GI bleeding in the rivaroxaban group (OR 15.5). Age, gender, body mass index, concomitant use of aspirin or NSAIDs, hemoglobin <12 g/dl, creatinine >1.5, GFR ≤30 ml/min/1.73 m^2, alanine aminotransferase >40 IU/L were not risk factors.

Conclusion: In this retrospective cohort study from the community setting, the incidence of GI bleeding was similar with rivaroxaban as compared to warfarin. The risk factors for developing GI bleeding in patients on rivaroxaban were the first 40 days of being on drug, concomitant use of dual antiplatelet agents, and a history of previous GI bleeding. Further studies in the community are needed to address the gastrointestinal safety of rivaroxaban and provide guidance to physicians.

1615

Resuming Antiplatelet and Anticoagulant Medications after Admission for Gastrointestinal Bleeding: Our Experience at a Teaching Hospital

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Purpose: Hospital admissions for GI bleeding in patients on antiplatelet and anticoagulant medications are common. Little is known about patient outcomes after discontinuation of these medications in patients admitted for GI bleeding.

Methods: We performed a retrospective chart review, using electronic medical records. Patients discharged from Rochester General Hospital, Rochester, New York, between November 2008 and November 2012 with a combined diagnosis of GI bleeding and CAD were eligible to be included. They must have been on one or more antiplatelet and or anticoagulant medications at the time of admission to the hospital. We aimed to determine the proportion of patients restarted on their medications on discharge. We also determined all-cause mortality rate, readmission rate, rates of recurrent GI bleeding and ACS (acute coronary syndrome) within 90 days of index admission.

Results: Of 246 patients screened, 136 were included in the study. Nearly 90% of patients were on ASA, while 23% and 14% were on dual antiplatelet therapy and triple oral antithrombotic therapy respectively. One or more of the patients' antiplatelet or anticoagulant medications were stopped at diagnosis of GI bleeding in 85.5% of the patients whereas over 70 % had all of their medications stopped. 30% of patients had all of their antiplatelet medications restarted on discharge. Over 90 days of follow up, 37% of the patients were readmitted. 64% were admitted for reasons other than a recurrent GI bleed or an acute coronary syndrome (versus 18% for GI bleed and 14% for ACS). There was no correlation between stopping all anticoagulants and antiplatelet medications and readmissions, recurrent gastrointestinal bleeding and acute coronary syndromes in 90 days since index admission. There was no correlation between death on follow up and anticoagulant and antiplatelet medication resumption.

Conclusion: Our study did not show increased rates of acute coronary syndromes, recurrent GI bleeding, or mortality following discontinuation of antiplatelet and or anticoagulant medications within three months of an index admission for GI bleeding in patients with history of CAD on ASA, Plavix or warfarin. This contrasts with findings from recent similar studies. Limitations to the study include the retrospective nature of the study and the heterogeneous population of patients studied. Prospective, larger studies investigating the ideal time to restart these medications are required.

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Is Rivaroxaban Safer than Dabigatran? Results of a Community Multicenter Study

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Purpose: Dabigatran and rivaroxaban are the first oral direct factor inhibitors used for the prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation. The gastrointestinal safety of these two drugs is relatively unexplored. The aim of our study was to compare the risk of GI bleeding with these both drugs in the community setting.

Methods: In this retrospective study, medical records of all patients who were on prophylactic and therapeutic doses of dabigatran or rivaroxaban from October 2010 to April 2013 were reviewed. The study was conducted in two community hospitals. Demographic details, laboratory studies, concomitant use of antiplatelet agents or non-steroidal anti-inflammatory drugs (NSAIDs), duration of rivaroxaban and dabigatran use (≤ or >40 days), and GI bleeding events were collected. GI bleeding was defined as any bleeding in the GI tract that required hospitalization. Inclusion criteria were patients on dabigatran for ≥3 days and rivaroxaban for ≥4 days. Exclusion criteria were unknown duration of either drug, lack of follow up, age <18, pregnancy, mechanical valve replacement and advanced kidney disease.

Results: A total of 374 patients were identified, 147 on rivaroxaban (87 on therapeutic doses), mean age 68.3+14.9, and 227 patients on dabigatran, mean age 72.7+12.4. GI bleeding occurred in 12 (5.3%) in the dabigatran and 7 (4.8%) patients in the rivaroxaban group (p=0.8215). Bleeding on therapeutic doses of rivaroxaban and dabigatran occurred in 8% and 5.3% of patients respectively (p=0.36). Multivariate analysis showed that odds of GI bleeding in patients on dabigatran for <40 days when compared to >40 days was 8.3 (p<0.0001). In the rivaroxaban group, the patients on the drug for ≤40 days had a higher incidence of GI bleeding than those on it for >40 days (OR 2.8, p=0.023). Concomitant use of antiplatelet agents or NSAIDs was not associated with increased GI bleeding in the dabigatran group, however, rivaroxaban and dual antiplatelet agents was associated with an increased risk of bleeding (OR 7.4, p=0.0378). Patients with prior GI bleeding in rivaroxaban group had a higher incidence of bleeding (OR 15.5, p=0.0002). Age, gender, body mass index, concomitant use of aspirin or NSAIDs, hemoglobin <12 g/dl, creatinine >1.5, ALT >40 IU/L, were not associated with bleeding in either group.

Conclusion: In this study, dabigatran was not associated with a higher incidence of GI bleeding when compared to rivaroxaban. Both drugs had a higher bleeding risk in the first 40 days. Previous GI bleeding and concomitant use of dual antiplatelet agents further increased bleeding risk on rivaroxaban. Further studies are needed to address the gastrointestinal safety of these new oral anticoagulant agents.

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Teaching Tailored to Gaps in Medical Knowledge. Improving Knowledge Using the Tool of Targeted Education

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Purpose: *Helicobacter pylori* (*H. pylori*) infection is a pandemic disease. 50% of the world population harbors the *H. pylori* bacteria. Although the majority of infections are asymptomatic, *H. pylori* has been implicated in the development of peptic ulcer disease and gastric malignancy (adenocarcinoma and lymphoma/maltoma). Because of the serious consequences of this common infection, it is crucial for medical professionals to understand the different aspects of this disease. The aim of this study is to assess our medical students and medical residents' knowledge of this disease and identify gaps in knowledge which may be amenable to targeted education.

Methods: Multiple-choice questionnaires that assessed the knowledge of *H. pylori* diagnosis, treatment and follow up were created by the Division of Gastroenterology at the Brooklyn Hospital Center in New York. They were distributed during the morning reports and noon conferences to two groups: medical students (MS) and internal medicine trainees (MR). After recognizing the gaps in both groups' knowledge, lectures were given to improve those areas and the survey was repeated to evaluate the outcome of educational intervention. The study participants were at different levels of their medical education (MS3-4, MR PGY1-3) and the questionnaires were filled anonymously. SPSS software was used for data analysis.

Results: One hundred fifty subjects were asked to fill out the questionnaire and 118 (78.6%) agreed to participate. The participants were 35.5% medical students (MS) and 64.5% medical residents (MR). Seventy five percent of MR identified the gold standard test for *H. pylori* before intervention in comparison to 96% after, while in MS group the improvement was from 50-93.7%. Before intervention, 81.6% of residents knew the appropriate treatment duration in comparison to 92% after intervention. Medical students who knew the treatment duration were 56% before and 68.7% after the intervention. Regarding the timing of post eradication testing, the response of MR before intervention 36.7% vs.74% after intervention while in MS the response improved from 19.2-62.5%.

Conclusion: As part of quality improvement, we used targeted education to improve medical knowledge on a specific topic. The pre intervention testing was used to identify gaps in knowledge and lectures were designed to plug the gaps. Post intervention testing showed significant improvement in all levels of medical training. We present this study as another tool for improving medical education.

1618

A Plan to Correct Overuse of PPIs in a Teaching Hospital: An Economic Burden to the Health Care Industry and Safety Concerns

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Purpose: Proton pump inhibitors (PPIs) are commonly prescribed medications in the current day practice. Overuse of PPIs is a major concern to patient safety and increasing health care costs. The aim of this study is to evaluate the indication and appropriateness of use of PPIs in hospitalized patients and outcome after educating medical residents' use of PPIs as per standard of care established guidelines.

Methods: Retrospective review of the medical records of 200 patients who were admitted to the medical floors (excluding ICU) and prescribed proton pump inhibitors during the admission, hospital stay or upon discharge. An extensive range of demographic and clinical variables were recorded for each patient. We used the clinical guidelines developed by American Society of Health-System Pharmacists, ACG and ASGE to determine the appropriateness of indications. After initial data review, a core curriculum lecture to medical residents educating them about indications and appropriateness of PPIs and their adverse effects if used inappropriately was done. About 200 patients' admission data was collected post lecture and appropriateness of PPIs prescribed was evaluated.

Results: Initial data prior to core lecture: 200 patients were included; 124 (62%) patients with inappropriate PPI use either at the time of admission, hospitalization or upon discharge of 61.5%, 80.3%, and 81.08%, respectively. Resident education with a core lecture regarding appropriate PPI use was done and it was noted that the inappropriate used of PPIs during admission, hospitalization and discharge decreased. 94 patients (47%) were prescribed PPIs either at the time of admission, hospitalization or upon discharge. Out of 94, 44.44% (8 of 18), 59.25% (32 of 54) and 59.09% (13 of 22), respectively.

Conclusion: The use of the proton pump inhibitors has been growing rapidly. Proton pump inhibitors are undoubtedly effective agents, but studies consistently suggest over-use in patients who do not fit the approved criteria, and in which less powerful agents would have been sufficiently effective. Concern is that many patients are being treated with PPIs without having tried life-style modification or simpler, less expensive treatments like H2-blockers. This poses economic burden to the health care industry and safety concerns considering that these drugs can cause rebound secretion of gastric acid, *C. difficile* infection, osteoporosis and most importantly could delay the diagnosis of gastric cancer.

1619

Recent Colon Cancer Incidence Rates among South Asians

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Purpose: To study the most recent colon cancer incidence rates among South Asians living in California.

Methods: Using the California Cancer Registry SEER*Stat database we calculated colon cancer incidence rates from 2006 to 2010 for the major race/ethnic groups, and the South Asian subgroup of the Asian and Pacific Islander group. We also analyzed colon cancer stage at diagnosis. Rates were calculated per 100,000 population, and age-adjusted to the 2000 U.S. standard population. South Asian subgroup includes Asian Indians (approximately 80%), Pakistanis, Bangladeshis, Sri Lankans, Nepalis, Bhutanese, and Maldivians.

Results: The 5-year age-adjusted colon cancer incidence rate among South Asians was the lowest of all the subgroups and major race/ethnic groups studied (12.3 cases per 100,000 population). Compared to non-Hispanic Whites, who are the predominant race in the country, South Asians are less likely to have advanced stage of cancer at diagnosis. However, South Asians in California have a 3-times higher colon cancer rate when compared to rates in India (3-4 per 100,000).

Conclusion: South Asians are the fastest growing ethnic group in the United States and the third largest Asian subgroup. California has the largest concentration of South Asians. It is heartening to note that this rapidly expanding subgroup has the least colon cancer burden in the State. However, their colon cancer rate is still 3-times higher than the rate in India. One possible explanation for this could be that South Asians are a conglomerate of diverse populations with significant differences in lifestyle and dietary practices, which are well known risk factors for colon cancer. Asian Indians are just one, albeit large part of this subgroup. While Asian diets are high in fiber in general, red meat consumption is lower among Asians Indians compared to other South Asians (Pakistanis, Bangladeshis etc), and other Asian Pacific Islander (API) populations. Interestingly, the colon cancer rates among other API subgroups in California approach that of non-Hispanic Whites (Chinese 24.1, Japanese 31.2, Filipino 22.4, Korean 25.8, and Vietnamese 25.3). Ethnocentric dietary and lifestyle practices protective against colon cancer should be identified and applied to the population in general to reduce colon cancer deaths.

[1619] Five-year age-adjusted colon cancer incidence, 2006–2010

Race/ethnic Group	Rate	Count
Non-Hispanic White	31.6	33,346
Non-Hispanic Black	43.7	4,281
Hispanic	25.0	8,407
Non-Hispanic Asian/Pacific Islander	26.0	6,081
South Asian	12.3	205

Rates per 100,000 and age-adjusted to the 2000 US population.

[1619] Colon cancer incidence by stage at diagnosis, 2006–2010

	South Asian		Non-Hispanic White	
	Rate	Count	Rate	Count
In situ	1.5	20	2.6	2,719
Stage I	2.6	41	7.2	7,519
Stage II	2.2	39	8.2	8,694
Stage III	3.6	62	7.1	7,487
Stage IV	2.4	44	5.8	6,050
Unknown	—	—	2.1	2,300

Rates per 100,000 and age-adjusted to the 2000 US population.

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Recent Colon Cancer Incidence Rates among Women In California

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Purpose: To study the most recent colon cancer incidence rates among women living in California.
Methods: Using the California Cancer Registry SEER*Stat database we calculated colon cancer incidence rates from 2006 to 2010 for the major race/ethnic groups, and analyzed rates among women in particular. We also analyzed colon cancer stage at diagnosis. Rates were calculated per 100,000 population, and age-adjusted to the 2000 U.S. standard population.
Results: Compared to men, women had lower rates of colon cancer among the major race/ethnic groups. The lowest rate was observed among South Asian women (11.4). The highest rate was seen among non-Hispanic Black women (40.9). When we analyzed the stage of colon cancer at diagnosis, rates among women were lower at every stage of colon cancer compared to men, except for stage III colon cancer among Chinese women (6.2 versus 5.7 among Chinese men).
Conclusion: Colon cancer rates among women in California were lower than rates in men across all major race/ethnicity groups, and subgroups. However, there was a wide gap in rates between non-Hispanic Black women and women of other races/ethnicities. In fact, the rate among non-Hispanic Black women (40.9) was higher than rates among men of all other races and ethnicities, except non-Hispanic Black men. This points to the continued gap in disease burden between non-Hispanic Blacks and all other races and ethnicities in general and women in particular. Continued efforts to identify and overcome barriers to colon cancer screening among the non-Hispanic Black community are required if we are to improve the overall health of our country.

[1620] Fiver-year age-adjusted colon cancer incidence rates, 2006–2010

	Total		Male		Female	
Race/Ethnic Group	Rate	Count	Rate	Count	Rate	Count
Non-Hispanic White	31.6	33,346	35.0	16,439	28.7	16,907
Non-Hispanic Black	43.7	4,281	47.4	2,031	40.9	2,250
Hispanic	25.0	8,407	29.9	4,407	21.3	4,000
Non-Hispanic Asian/Pacific Islander	26.0	6,081	28.6	2,898	24.0	3,183

Rates per 100,000 and age-adjusted to 2000 US population.

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Endoscopic Resection Yields Reliable Outcomes for Small Gastrointestinal Neuroendocrine Tumors

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Purpose: This study aims to analyze the characteristics of gastrointestinal neuroendocrine tumors (GI-NETs) and the outcomes of endoscopic resection for small lesions.
Methods: At a tertiary high volume university hospital, from 2007 to 2011, the medical records of patients who were diagnosed with GI-NETs were reviewed retrospectively.
Results: A total of 91 patients were enrolled in study. Rectal NET is the most common (n=70) and is followed by duodenal NET (n=13) and gastric NET (n=6). Endoscopic resection was performed in 66/70 rectal NET, 6/13 duodenal NET, and 4/6 gastric NET. Endoscopic mucosal resection (EMR), submucosal dissection (ESD) and transanal endoscopic microsurgery (TEM) were decided on operator's discretion. The complete resection rate was higher in the ESD group (82.7%) and in the TEM group (100%) compared to the EMR group (65.5%; p<0.046). The complication rate was higher in the ESD group (47.8%) than in the EMR group (18.5%; p=0.003). No local tumor recurrence has been observed in all patients, regardless of the procedures, during the median follow up period of 21.5±13.5 months.
Conclusion: Endoscopic resection was safe and reliable in term of clinical outcomes, though pathologic examination reported positive margin more frequently in EMR cases. Small neuroendocrine tumors of gastrointestinal tract can be managed reliably with both endoscopic resection and TEM.

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The Association of Beverage Intake Preference with Bowel Preparation Laxative Taste Preference: Results of Public Taste Tests

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Purpose: There is a need to improve the bowel preparation experience of patients in order to increase the uptake of colorectal cancer screening. However, newer FDA approved products are typically not covered by healthcare insurance. Aim: To determine whether beverage intake preference can guide the selection of bowel laxative preparations which are usually covered by health insurance for patients undergoing colonoscopy to personalize laxative recommendations.
Methods: We conducted seven public taste tests in Washington, DC, using commercially procured (A) unflavored polyethylene glycol (PEG), (B) orange flavored PEG, and (C) Moviprep which is a lemon flavored laxative. Volunteers completed baseline questionnaires including their beverage intake preferences (including use of sugar or sweeteners and cream or milk), tasted the laxatives in randomly assigned order and ranked the laxatives as 1st, 2nd, and 3rd based on their taste preferences. Our outcomes are the number of 1st place rankings for each laxative preparation. We used logistic regression models to compare the beverage intake characteristics of volunteers who chose each laxative as 1st to the rest of the volunteers and calculated odds ratios (OR) and 95% confidence intervals (CI).
Results: A total of 670 volunteers participated in the taste tests: mean age = 44.4 years (range 18-83 years), 56% female, 88.2% black, 48.2% had college education, 37.1% earn less than $25,000 per year, 35.4% obese (BMI ≥30kg/m^2), 36.0% with history of smoking, and 60.5% had history of alcohol ingestion. The taste sequence was 34.5% ABC, 32.5% BCA and 33% CAB. Flavored PEG was ranked as first by 69.4% of volunteers (n=465) followed by Moviprep 20.8% (n=139) and unflavored PEG 9.9% (n=66). Overall, no beverage intake pattern for coffee, tea, and carbonated drinks (regular and diet) predicted the choice of unflavored PEG, flavored PEG and Moviprep.
Conclusion: Beverage intake preference does not predict taste preference for bowel preparation laxatives. It is important to develop more tolerable bowel laxative preparations and make these preparations available to patients through their health insurance.

1623

Colonoscopy with Random Mucosal Biopsies for Chronic Diarrhea: Practice Pattern Differences between Gastroenterologists and Surgeons

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Purpose: Colonoscopy with random mucosal biopsies is recommended for patients with chronic diarrhea and nondiagnostic initial evaluation. Although colonoscopy is commonly performed by both gastroenterologists and surgeons, there is limited data comparing biopsy practice patterns between these two specialties for this indication.
Methods: Retrospective review of 276 patients who underwent colonoscopy by either gastroenterologists or surgeons for chronic diarrhea at a large U.S. tertiary care, university hospital, 2008-2011. All patients were >18 years old. Exclusion criteria: known organic gastrointestinal disease causing diarrhea (e.g., IBD, microscopic colitis, celiac disease), presence of hematochezia/melena, recent (<6 months) infectious colitis, and significant mucosal inflammation visible at colonoscopy (minimal, nonspecific, inflammation accepted). Patient demographics, colonoscopy procedural details, and colonoscopic diagnoses were compared between patients who underwent colonoscopy by gastroenterologist vs. surgeon.
Results: 142 patients had colonoscopies performed by gastroenterologists vs. 134 colonoscopies performed by surgeons (mean age: 58.7 vs. 58.6 yrs, p=NS; 71% vs. 80% female, p=NS). All gastroenterologists were board-certified, and all surgeons were board-certified colorectal surgeons. Gastroenterologists performed inpatient colonoscopies significantly more frequently than surgeons

(23/142 pts, 16% vs. 3/134 pts, 2.2%, p<0.0001). Although there was no difference in prevalence of macroscopically normal mucosa between groups, gastroenterologists significantly more frequently obtained random colonic biopsies and intubated/biopsied terminal ileum compared to surgeons (Table I). Microscopic colitis was the most common diagnosis in both groups, followed by non-specific colitis (Table 2).

Conclusion: Gastroenterologists significantly more frequently follow published guidelines and obtain random colonic biopsies in patients undergoing colonoscopy for chronic diarrhea at one large, university hospital. This study suggests importance of further education of surgeons about protocol for colonoscopic evaluation of chronic diarrhea.

[1623] Table 1.

Parameter	Gastroenterologists (N=142), n (%)	Surgeons (N=134), n (%)	P-value
Normal mucosa on colonoscopy	132 (92.9%)	119 (88.8%)	0.23
Colon biopsies performed	137 (96.5%)	65 (48.5%)	0.0001
Terminal ileum intubated	88 (61.2%)	37 (27.6%)	0.0001
Terminal ileum biopsied	45 (31.7%)	15 (11.2%)	0.0001

[1623] Table 2.

Diagnosis	Gastroenterologists (N=142), n (%)	Surgeons (N=134), n (%)	P-value
Microscopic colitis	14 (9.9%)	13 (9.7%)	0.96
Nonspecific colitis	0	6 (4.5%)	0.01
Eosinophilic colitis	2 (1.4%)	0	0.49
Ischemic colitis	0	2 (1.5%)	0.23
Inflammatory bowel disease	0	1 (0.7%)	0.48
Total	16 (11.3%)	22 (16.4%)	0.28

1624

Nasal Bridle Indications and Outcomes at Milton Keynes General Hospital

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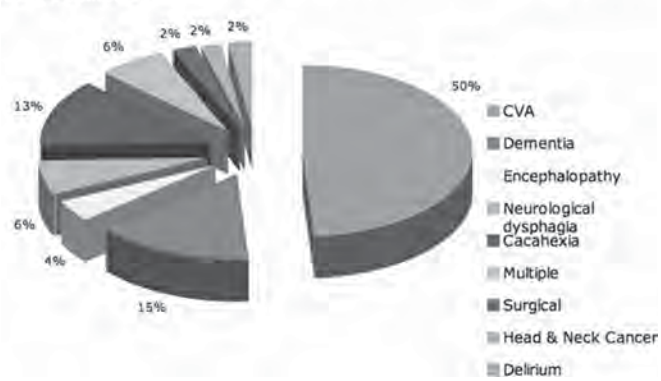
Purpose: Nasal bridle use is claimed to enable uninterrupted delivery of enteral nutrition and prevent unnecessary percutaneous endoscopic gastrostomies (PEGs). This study assesses the outcomes of patients fitted with nasal bridles at Milton Keynes Hospital.

Methods: Retrospective case note review of patients fitted with a nasal bridle between May 2009 and November 2012.

Results: 47 patients were fed by nasal bridles for a mean of 12.8 days (range 1-86 days). Figure 1 shows the indications for nasogastric feeding. Successful placement occurred in 93% of patients with no immediate complications. 62% of nasal bridles remained in situ. Subgroup analysis demonstrated a higher pull out rate in the non stroke group (52% vs 21%) where patients were more likely to have an underlying pathology causing confusion. 38% patients recovered their swallow. Fourteen patients (30%) went on to have PEG inserted, two of which recovered their swallow. 32% of patients passed away before recovering their swallow or having permanent enteral feeding established. The overall mortality rate in the group was high (n=21; 45%). No deaths were a direct complication of the nasal bridle, but 76% were secondary to aspiration pneumonia.

Conclusion: Nasogastric bridle insertion is a low risk procedure that can bridge a patient's nutrition during an acute illness, allowing a patient's swallow to recover without risking a more invasive long term solution. However bridle placement does not prevent aspiration from nasogastric feed nor the removal of the nasogastric tube itself, particularly in confused patients.

Figure 1: Indications for nasogastric feeding. Cerebrovascular accident (CVA) 50%; Dementia 15%; Encephalopathy 4%; Neurological dysphagia 6%; Cachexia 13%; Multiple 6%; Surgical 2%; Head and Neck 2%; Delirium 2%.



[1624]

1625

The Utility of Heme-occult Testing Prior to Therapeutic Anticoagulation

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Purpose: Fecal occult blood testing (FOBT) is routinely performed prior to starting therapeutic anticoagulation in many hospitals. However, there is not sufficient evidence that FOBT predicts future risk of bleeding in these patients. The purpose of this study was to determine if a positive FOBT is a predictor of gastrointestinal bleeding (GIB) while on therapeutic anticoagulation. We also aimed to determine if there are other predictors of bleeding based on history and admission lab values.

Methods: A retrospective analysis of patients admitted over two years with a diagnosis of venous thromboembolism was performed. Exclusion criteria were those on outpatient anticoagulation, overt bleeding on presentation and patients not anticoagulated due to poor candidacy. Demographic data collected included age, gender, race, malignancies, gastrointestinal diseases, alcohol use and fall risk. Hospitalization data collected included diagnosis, pre-anticoagulation FOBT, admission and trough hemoglobin, coagulation studies, liver and renal chemistries, BMI, type of anticoagulation, bleeding, interventions and days observed on anticoagulation. A HASBLED score was calculated for all patients.

Results: Of the 718 patients screened, 375 patients (Females 205, 56.8%) met criteria. Diagnoses were DVT (152, 40.5%), PE (148, 39.5%) or both (75, 20%). FOBT was either not performed or documented in 131 patients, and was resulted as negative, trace positive and positive in 213, 18 and 34 patients respectively. A total of 14 patients (3.73%) had a GIB after starting anticoagulation. Of these, 12 (85%) had a positive FOBT test prior to anticoagulation. FOBT testing had a sensitivity of 85.7% and specificity of 88.2% for predicting a GIB in the hospital. However, the positive predictive value

[1625]

		No Bleeding	GI Bleeding	Total	P Value
Gender	Male	156	6	162	
	Female	205	8	213	
Mean Age, y		60.6	3.7		0.53
Race	White	137	3	140	
	Black	220	11	231	
	Other	4	0	4	
Diagnosis	DVT	145	7	152	
	PE	146	2	148	
	DVT and PE	70	5	75	
Comorbitities	Hypertension	214	10	224	
	CVA History	31	2	33	
	Anti-PLT Use	112	8	120	
	PPI Use	96	5	101	
	Excessive Alcohol	19	1	20	
Heme Occult Result	Neg	203	2	205	
	Trace +	12	3	15	
	Positive	15	9	24	
	Not Documented	131	0	131	
Admission Labs	Hb, Mean	12.4	10.5		0.002
	INR, Mean	1.19	1.28		0.38
	Creatinine, mean	1.25	2.4		0.03
	Albumin, Mean	3.4	2.9		0.27
BMI		29.5	31.4		0.48
HAS-BLED (Mean)		1.6	2.4		0.02

for a GIB was only 34% while the negative predictive value was 99%. Patients that experienced a GIB had significantly lower admission hemoglobin, higher admission creatinine and a higher HASBLED score.

Conclusion: FOBT may to be useful for reassurance that a GIB will not occur if it is negative, however a positive result does not truly predict the risk of GIB with a positive predictive value of only 30.4%. Therefore, in the absence of other signs of a GIB, an isolated positive FOBT is unlikely to be significant enough to affect decisions regarding anticoagulation of a patient. This leads to the question of whether a FOBT is necessary when there is not a suspicion for an overt or occult GIB. Additionally, other clinical and laboratory parameters including HASBLED, admission hemoglobin and creatinine may also predict bleeding risk in this group of patients and further prospective studies into this area could be helpful.

1626

Successful Treatment with Infliximab Therapy among Underserved Individuals with Inflammatory Bowel Disease

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Purpose: An expanding arsenal of novel pharmacotherapies for patients with inflammatory bowel diseases (IBD) have been developed and are associated with improved outcomes. Infliximab (IFX), a chimeric monoclonal antibody targeting TNF, is an effective treatment for both Crohn's disease (CD) and ulcerative colitis (UC); however, the clinical impact of IFX among underserved, uninsured populations has not specifically been evaluated. The relatively high cost of IFX and its administration can limit access to this medication and appropriate follow-up for some underserved IBD patients. The aim of this study was to evaluate the adherence and clinical outcomes with IFX among indigent patients with IBD.

Methods: We designed a retrospective cohort study including patients with CD or UC that started IFX therapy between December 2010-December 2012 and who were seen in the gastroenterology clinic of Jackson Memorial Hospital (Miami-Dade County's public safety-net hospital). All included patients received health care through the county health program or Medicaid; patients with private, commercial insurance were excluded. Predictive variables included demographics data, disease phenotype, baseline medications, IFX and antibody levels and adherence. Non-adherence was defined as ≥4 weeks of delay in receipt of appropriate IFX dose. The primary outcome was loss of response IFX as documented by treating physician, need to escalate IFX therapy (dose and/or shorter interval), and switching to alternative medications.

Results: Baseline characteristics of the 49 patients are shown in Table 1. Non-adherence to IFX was observed in 44.9%. 94% responded to therapy, but after a mean follow-up of 10 months (range: 3-24), 30% of that sub-group lost effect and required dose escalation with 14.3% of the patients requiring change to an alternative anti-TNF. All patients were screened for latent tuberculosis and hepatitis B. The only reported adverse event was an infusion reaction, but no infections or malignancies were described through the follow-up period. IFX levels were ordered in 53% of the patients, but only financially approved and performed in 25%. The association between predictive variables and loss of response is shown in Table 2.

[1626] Table 1. Baseline characteristics of the study population

Female gender (n,%)	23 (47)
Hispanic ethnicity (n,%)	39 (80)
Age (Mean, SD)	38 (13)
Years with IBD (mean, SD)	13 (21)
MEDICATIONS AT THE TIME OF IFX INDUCTION	
Aminosalicylates (n,%)	21 (43)
Corticosteroids (n,%)	28 (57)
Immunomodulator (n,%)	17 (35)
CROHN'S DISEASE PHENOTYPE (n=38)	
Ileal disease (n,%)	9 (23)
Ileocolonic disease (n,%)	28 (57)
Colonic disease (n,%)	7 (18)
Penetrating disease (n,%)	20 (50)
Strictures (n,%)	8 (20)
Upper GI involvement (n,%)	2 (5)
Peri-anal involvement (n,%)	16 (42)
ULCERATIVE COLITIS PHENOTYPE (n=11)	
Proctitis (n,%)	None
Left colitis (n,%)	2 (18)
Pan-colitis (n,%)	8 (73)
Extra-intestinal manifestations (n,%)	7 (14)
History of surgery for IBD	8 (16)

[1626] Table 2. Association between the predictive variables and loss of response to IFX in an indigent population

Study variable	OR	95% CI	P value
Non-adherence to infusion schedule	1.9	0.5–7.2	0.3
Diagnosis of ulcerative colitis	4.3	0.8–23	0.08
Combination therapy with immunomodulator	0.1	0.01–0.3	<0.001
History of surgery for IBD	0.8	0.1–4.5	0.8
Hispanic ethnicity	0.4	0.1–1.9	0.2

Conclusion: IFX has efficacy as an induction and maintenance agent among under-served individuals with IBD treated in a safety-net hospital. Combination therapy with an immunomodulator was associated with a lower rate of response loss. Though limited by small numbers, a diagnosis of UC and non-adherence to infusion schedule showed trends toward association with loss of response. Further studies trying to develop strategies to improve the quality of care of these patients assuring treatment adherence are warranted.

1627

The 1:00 AM Consult: Assessing Communication with Primary Providers as a Clinical Skill in Gastroenterology Fellowship Training

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Purpose: Interacting with a patient's care team in all situations, including the overnight emergency consult, is a core skill for all specialty physicians. We developed a night-call objective structured clinical examination (OSCE) emphasizing the ACGME's core competencies of interpersonal communication, professionalism, and systems-based practice to assess the competency of GI fellows in this area with the intent of informing future training curriculums.

Methods: In the "overnight call" case, a new intern in the medical ICU calls a consult at 1:00 AM to evaluate a patient with a massive upper gastrointestinal bleed. Earlier, on admission, the patient received a suboptimal upper endoscopy with a plan for repeat endoscopy in the morning, but the patient decompensates overnight and the intern pleads for help. The goals for the fellow were to calm the intern and obtain complete information about the patient before making an informed decision. Twelve fellows from four programs participated and were observed by an attending physician. Feedback was provided to the fellow by the faculty observer and the standardized intern completed previously validated behaviorally anchored checklists rating the fellow's performance. The fellows were rated on a three point scale for each task: not done (the fellow did not perform the task), partly done (the fellow attempted to perform the task but was unsuccessful) and well done (the fellow addressed the task and was successful).

Results: Half of the fellows successfully calmed the intern while 58% (7/12) of fellows acknowledged the intern's emotions appropriately. While 58% (7/12) of fellows obtained findings from the prior endoscopic procedure, only 17% (2/12) assessed the quality and completeness of the procedure, 8% (1/12) asked about scheduled follow-up events, and none (0/12) asked for the rationale for the follow-up plans. While all of the fellows provided a clear plan of action, only 33% (4/12) asked questions to assess if the intern understood the plan. None of the fellows collaborated with the intern to identify possible next steps in diagnosis/treatment or appreciated the intern's contributions to clinical problem solving.

Conclusion: OSCEs provide a structured opportunity to assess the ability of fellows to achieve an urgent therapeutic plan and relationship with fellow trainees who serve in different patient care roles. All fellows were able to provide clear plans of action, but few involved the intern in clinical problem solving or checked for intern comprehension. These results point to deficiencies and potential areas of improvement in provider communication and professional collaboration curriculum for fellowship training.

1628

Large Variance Seen in Medicare Payments for Gastrointestinal Bleeding

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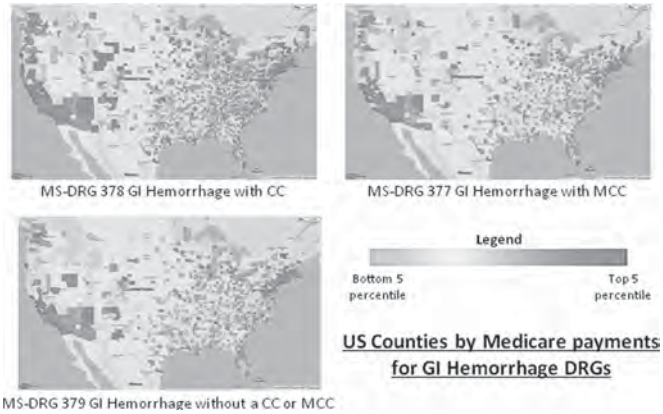
Purpose: In May 2013, Centers for Medicare and Medicaid Services (CMS) released the hospital charge and payment data for top 100 Medicare Severity Diagnosis Related Groups (MS-DRG) for the first time. This study evaluates variability in covered charges submitted by hospitals and CMS payments for gastrointestinal hemorrhage.

Methods: MS-DRG is an aggregate of similar diagnoses, procedures and services during a hospital stay with sub-classifications - Major Complication/Comorbidity (MCC), Complication/ Comorbidity (CC) and Without-Complication/Comorbidity (w/o CC/MCC) ranging from most severe cases to cases with no significant conditions affecting severity or resource utilization. We selected DRGs of all 3 severity types (DRG 377, DRG 378, DRG 379 respectively) for gastrointestinal hemorrhage for all Medicare discharges in the year 2011. Descriptive statistics were used to analyze variations in DRG payments, submitted charges, and volumes based on geographical region and hospital ownership.



[1628]

Results: Data from 2,494 acute care facilities were included. The highest number of discharges were in Florida (FL), California (CA), Texas (TX), New York (NY), and Illinois (IL) and the lowest were in Alaska (AK), Wyoming (WY), Vermont (VT), Montana (MT), and Idaho (ID). 48,398 discharges were DRG 377 with mean hospital charge of $46,459, and average Medicare payment of $12,730. The highest average payment was in AK ($20,419) compared to lowest average payment in AR ($10,335). 138,678 discharges were classified as DRG 378 with average hospital charge of $26,058 and average payment of $7,084. The highest average payment was in AK ($10,988) compared to the lowest average payment in AL ($5,864). 33,393 discharges were classified as DRG 379, with the mean hospital charge of $18,975, and average payment of $5,031. Highest average payment was in AK ($8,045) and the lowest was in Kansas ($4,180). County by county variability is seen in the attached graphic. Proprietary hospitals were noted to have maximum average charge but lowest average payments across DRGs.

Conclusion: Significant state, county and ownership based cost variations exist within all MS-DRGs for for gastrointestinal bleeding. Future studies should focus on determining the cause of these variations and determining cost of care for specific MS-DRGs.

Disclosure - Maged Rizk: Investor: Innowaiting (Dawazu LLC).

1629

Discrete Event Simulation: A Useful Tool to Analyze the Impact of Changes in the Endoscopy Unit

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Purpose: The projected increased demand for healthcare in the setting of limited resources obligates operational efficiency. Discrete event simulation (DES) is a modeling method that allows for optimization of systems through testing of different configurations prior to implementation. By using DES, potential changes to an endoscopy unit can be modeled to understand the net effect on outcomes such as daily volume, patient cycle time, and efficiency. Our objective was to identify the effect of adding an advanced endoscopy room on the overall efficiency of the endoscopy unit.

Methods: Through an iterative process we built a DES model of a five-procedure-room gastrointestinal endoscopy suite (one MD per procedure room) with 5 preparation and 9 recovery rooms at a large academic medical center. All procedures were done in the procedure rooms except paracenteses and liver biopsies which were done in a recovery room. Data was collected on five random days between August 2011 and January 2012 to create the model using MedModel simulation software (ProModel Corporation, Orem, Utah). After validating the baseline model, we sought to investigate the effect of adding an additional advanced endoscopy procedure room to the overall efficiency.

Results: The baseline model had 42 scheduled cases per day (22 colonoscopy, 6 EGD, 5 ERCP, 6 EUS, 2 paracentesis, 1 liver biopsy) plus 4 additional inpatient cases. The scheduled case volume was reduced by 8% to account for no-shows resulting in a daily total of 43 cases. With the addition of an additional interventional endoscopy room dedicated to ERCP, the procedure volume increased to 47 cases per day with 4 additional ERCPs. However, the patient cycle time (181.4 → 205.5 minutes) and number of blocked outflow events (23% → 90%) substantially increased, significantly reducing the efficiency of the unit. With the relocation of liver biopsies and paracenteses out of the recovery area, efficiency returned to near baseline levels (Table 1).

Conclusion: By applying tools such as DES, we can model changes in an endoscopy suite prior to implementation. In our case, we were able to model the addition of a procedure room and demonstrate inadequate recovery space unless the paracenteses/liver biopsies were moved out of the recovery rooms. DES is a powerful tool to aid in identifying strategies to improve efficiency in endoscopy and model changes to the system prior to enactment. The use of DES ought to be significantly expanded in endoscopy centers.

[1629] Table 1. Comparison of key performance metrics generated by the simulation model

Key Metrics	Status Quo (5 Procedure Rooms + Paracentesis/Liver Bx in Recovery Room)	Status Quo + Additional Procedure Room	Status Quo + Additional Procedure Room + Relocation of Paras/Liver Biopsy
Daily Volume (cases per day)	43	47	44
Patient cycle time from prep to discharge (minutes)	181.4	205.5	192.8
Average completion time of last exam	5:02 PM	5:30 PM	4:55 PM
Blocked inflow (% per day)	32%	31%	33%
Average delay when blocked inflow event occurs (minutes)	26.4	28.6	26.1
Blocked outflow (% per day)	23%	90%	21%
Average delay when blocked outflow event occurs (minutes)	9.0	31.4	6.8

1630

External Validation of a Cirrhosis Prediction Model for 30-day Readmissions

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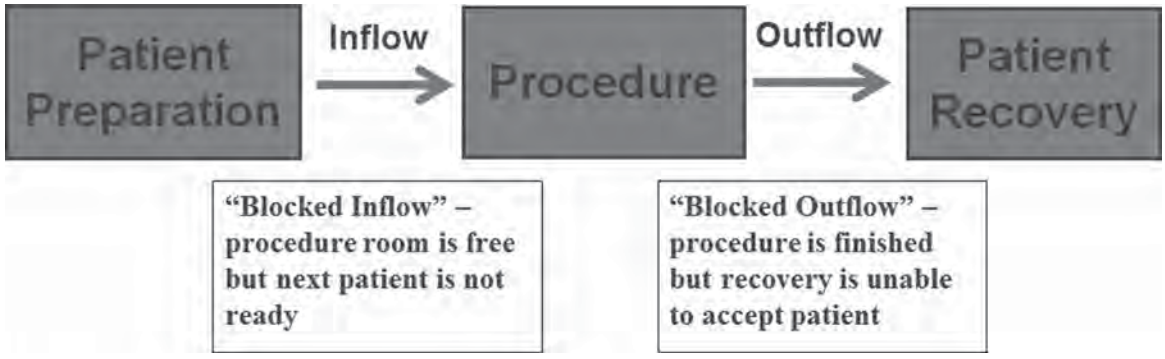
Purpose: Reducing 30-day hospital readmissions is an important issue in health care policy. Volk et al. recently proposed a cirrhosis readmission prediction model that includes gender, the number of cirrhosis complications, whether a patient is on the transplant list at discharge, model of end stage liver disease (MELD), serum sodium, the number of medications on discharge, and disposition with a c-statistic of 0.65 at his institution. This study aims to assess whether this model is similarly predictive at an outside tertiary care facility.

Methods: Patients admitted to the liver service of a tertiary care facility between August 2008 and September 2010 with chronic liver disease were considered eligible. Patients were excluded if admitted within 30 days prior to the index admission. Patients were included if they had at least had 2 follow-up visits with the liver service following the index admission. All outpatient and inpatient encounters were tracked until 1) death, 2) loss to follow-up, 3) liver transplantation, or 4) end of study period (5/31/12). Retrospective chart review of demographics, as well as variables from Volk's readmission model were



[1629] Figure 1. Model structure.

collected. The linear predictor for the model presented by Volk et al. was constructed by multiplying the natural logarithm of each hazard ratio by the corresponding variable. Cox regression was used to assess the role of this score for prediction of 30-day readmission. The population was divided into low and high risk groups using the median value of linear predictor, and log-rank test was used to compare the groups. A p-value < 0.05 was considered statistically significant.

Results: A total of 203 subjects were included in the analysis. Approximately 30% of these were readmitted within 30-days of initial discharge. Table 1 presents a summary of patient characteristics. Volk's score was found to be significantly associated with 30-day readmission (p=0.003); with every one point increase in the score, the hazard of being readmitted within 30 days almost doubles (HR [95% CI]: 2.2 [1.3, 3.8]). The c-statistic for this score was estimated to be 0.66.

Conclusion: Hospital readmissions among patients with cirrhosis are common and moderately predictable. We are able to externally validate Volk et al's cirrhosis prediction model for 30-day readmission with a c-statistic of 0.66 at our tertiary center.

Disclosure - Maged Rizk: Investor: Innowaiting (Dawazu LLC).

[1630] Table 1. Demographic and clinical characteristics

Factor	Overall (N=203)
Age at admission (yrs)	54.2±10.9
Male (%)	107 (52.7)
Complications of Cirrhosis	
Hepatic Encephalopathy (%)	47 (23.2)
Variceal hemorrhage (%)	25 (12.3)
Spontaneous bacterial peritonitis during admission (%)	11 (5.4)
Renal failure in the presence of ascites	19 (9.4)
Ascites requiring paracentesis (%)	64 (31.5)
On transplant list at discharge (%)	28 (13.8)
MELD at discharge	14.0 [10.0,18.0]
Serum sodium at discharge	136.0 [131.0,139.0]
Number of medications on Discharge	9.0 [6.0,12.0]
Disposition	
Home/self-care (%)	181 (89.2)
Home/health service (%)	7 (3.4)
Nursing home/rehabilitation facility (%)	15 (7.4)
Volk's score (Linear predictor)	−2.7±0.45

1631

Artificial Intelligence (AI): A Novel Approach to Help Refine Colonoscopy Scheduling Guidelines

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Purpose: Current guidelines for colorectal cancer screening intervals have been based on clinical experience, biological models for progression of adenomatous lesions, and clinical studies. With over a decade of experience performing screening colonoscopies, it is time to exploit these data to see if we can improve colonoscopy scheduling policies. Recent advances in AI have produced powerful new algorithms for pattern discovery. Aim: Use AI to find patterns to refine colonoscopy intervals.

Methods: The medical records of patients receiving an initial screening colonoscopy between 1988 and 2012, and having at least one follow-up colonoscopy, were collected. We developed an algorithm to compute a patient's risk category (average, above average, high) using information available after a colonoscopy. A data set was assembled with a record for each visit-pair containing patient information from visit-1, the time interval between the visits, and the risk assessment computed at visit-2. Pattern discovery methods both linear (partial least squares, PLS) and non-linear (decision trees, DT) were applied to the task of predicting the future risk (visit-2) using information known at visit-1.

Results: To date 491 such patients have been identified, predominantly Caucasian (84%). The ages range from 22 to 94 with a mean of 61, 48% female. The follow-up intervals range from two to 208 months, with a mean of 52.8. This yielded 875 visit-pairs, divided into the three cohorts: average, above average and high-risk patients at visit 1. Between-visit-intervals varied widely within all cohorts, but showed a small trend toward shorter intervals for higher risk patients. The PLS models outperformed the DT (AUC = 0.54, VUS=0.48, ROC=0.69) on all cohorts, and neither model performed well on the average risk cohort. PLS achieved VUS=0.712, for the above average and AUC=0.969 for the high risk cohorts respectively. Features contributing most to the predictive models included tobacco use, body mass index score, a family history of colorectal cancer (among first and second degree relatives), a personal history of colonic polyps or GI disorder (IBS, Crohn's, chronic diarrhea), and the number of polyps found at cancer screenings. Social and demographic factors were found to be at least as influential as colonoscopy findings, such as polyp histologies.

Conclusion: PLS indicates useful patterns among above-average and high risk patients. This pilot study should provide the experience needed to design a larger study and estimate the sample sizes needed for statistical confidence. The possibility for evidence-based personalized colonoscopy scheduling is the dream, particularly if we could identify below-average risk patients.

1632

High Dimensional Data Mining Can Predict Early Readmission for Patients with Chronic Pancreatitis

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Purpose: Early hospital readmission is a significant economic health care burden that is under intense scrutiny. Medical reform is resulting in payment models that penalize multiple admissions within 30 days. Chronic pancreatitis (CP) is a progressive inflammatory disorder that frequently results in hospital-based care and multiple readmissions. We aimed to derive and internally validate a fully automatic, robust risk prediction model with the outcome of preventable 30-day readmission in CP patients using the high-dimensional covariates from administrative data collected prior to discharge.

Methods: The cohort included CP patients hospitalized between 2007 and 2012 at Johns Hopkins Hospital. The scoring system was based on several categories of attributes from easily accessible administrative data, including occurrence of diagnoses (2,648 observed ICD-9 codes), procedures (666 observed ICD-9 codes) and drugs (2143 observed AHFS identifiers), previous healthcare resource utilization (including diagnoses, procedures, and medications), as well as demographic and admission characteristics for the indexed admission. Attributes were chosen by a multistep algorithm which included 1) defining data dimensions and transforming into computable formats, 2) assessing the univariate correlation with outcome, and 3) selecting top ranked attributes for the multivariable logistic regression model. No assumptions were placed on the potential predictors of interest as all model selection was fully automated. To reduce variability, the model was validated using 5-fold cross validation. In each round, the three step algorithm was applied to the training set then subsequently validated on the held-out validation set. The final performance estimates, summarized as the Area Under the Curve (AUC) which is a composite measure of sensitivity and specificity, were averaged over the rounds.

Results: 3,136 adult patients were admitted with diagnosis of CP (ICD-9 code 577.1). 12.6% had unplanned readmissions within 30 days of discharge to home. Out of 5,478 candidate attributes, the cross validation technique identified 8 independent risk factors (5 drugs, 2 procedures and 1 admission characteristic). The AUC was 0.68±0.03 over 5 folds of validation with sensitivity 0.47, specificity 0.76 and positive predictive value 0.23.

Conclusion: We derived and validated a scoring system that predicts the risk of 30-day readmission in CP patients based on easily obtainable administrative data at the time of discharge. The model is fully automatic and demonstrates robust performance. This model identifies individual-level risk factors for preventable readmission which will facilitate the adoption of best practices to prevent costly readmissions in CP patients.

1633

Cost-effectiveness of Optical Endomicroscopy versus HD-WLE Alone in BE Patients Referred for Suspicious Lesions (Diagnose and Treat)

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Purpose: To determine the cost-effectiveness of Optical Endomicroscopy (OE) versus HD-WLE alone to: 1) diagnose or rule out High Grade Dysplasia/Early Cancer in BE patients referred to a treatment center for suspected HGD/EC lesions; and 2) guide treatment decisions for these patients.

Methods: The decision model compares 2 strategies, OE versus HD-WLE alone, for diagnosis and guidance of treatment for BE patients referred to a specialist center. The model is conducted from the payer perspective, with expected Medicare facility and physician payments serving as "base case" costs. The primary effectiveness measure is the proportion of patients with true HGD/EC identified and treated using EMR. The following additional outcomes associated with the use of OE versus HD-WLE alone are compared: proportion of all lesions biopsied; proportion of patients receiving unnecessary treatment with EMR; and expected number of endoscopies.

Results: Cost effectiveness analysis: the more cost-effective strategy is OE as it is equally effective in identifying and guiding treatment of patients with true HGD/EC lesions and has lower expected costs. The sensitivity analyses demonstrate that OE is a robustly more cost-efficient diagnostic and treatment guidance strategy than HD-WLE alone, with Optical Endomicroscopy found to be the less expensive and equally efficacious strategy in all but two of the sensitivity analyses undertaken.

Conclusion: The model predicts equal effectiveness in identifying true HGD/EC lesions using OE with lower expected costs The model also predicts that use of OE to guide treatment can result in a 25% decrease in the number of endoscopies while only 3.9% of lesions examined using OE are predicted to have false positive results and thus to receive an unnecessary treatment procedure.

1634

Mortality in Acute Upper Gastrointestinal Bleeding Is Uncommonly due to Persistent Hemorrhage

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Purpose: Upper GI bleeding (UGIB) has a high mortality rate, in the range of 5-10% for non-variceal and 20% for variceal UGIB, respectively. However, the ultimate causes of death remain unclear. Thus, we aimed to understand the cause of death in patients with UGIB.

Methods: We prospectively captured data on patients admitted for acute UGIB from January 2006 to December 2012 and died in-hospital and/or within 30 days of index or rebleed.
Results: A total of 2,387 patients with acute UGIB were admitted during the study period, with 170 deaths (7%). 23 (14% of deaths, 1% of patients admitted) were caused by uncontrollable UGIB in the setting of ongoing transfusion (Table 1). Multi-organ dysfunction syndrome (MODS) and respiratory or cardiac failure were the two most overall common causes of death (32% and 19%, respectively). Non-bleeding related causes of death were more often present in men (73% vs. 43%, p<0.004). There were no differences in endoscopic diagnosis, presence of active bleeding and/or stigmata of recent bleeding, frequency of endoscopic therapy in patients dying uncontrolled bleeding vs. other causes of death. Patients who died from active bleeding were more likely to have rebled (48% vs. 14%, p<0.001) and were more likely to have died within 48 hours (Table 2). The median length of hospital stay was significantly shorter in GI bleeding mortality (5 vs. 13 days, p=0.025). Additionally, all GI bleeding related mortality occurred during hospital stay (Table 2).
Conclusion: Death in patients with acute UGIB is uncommonly due to ongoing bleeding. Further, patients who died of active bleeding most often died within 48 hours of either the index bleed or rebleed. Death from UGIB, in our experience, appears to be lower than in other studies.

[1634] Table 1. Causes of mortality

Cause of mortality	n=170	Percent
MODS	55	32%
Respiratory or cardiac failure	32	19%
GI bleeding	23	14%
Terminal malignancy	20	12%
Hepatic failure	16	9%
Sepsis	12	7%
Renal failure	5	3%
Other	7	4%

[1634] Table 2. Timing of mortality

	Bleeding related mortality n=23	Non-bleeding related mortality n=147	P-value
Timing of mortality			<0.0001
Died within 48 h of index bleed	9 (40%)	22 (15%)	
Died within 48 h of rebleed	10 (43%)	28 (19%)	
Died >48 h of iindex or rebleed	4 (17%)	97 (66%)	
Died during hospital stay	23 (100%)	125 (85%)	0.032

1635

Impact of Inappropriate Fecal Occult Blood Testing in the Veterans Health Administration

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Purpose: To reduce costs associated with and improve the process of colorectal cancer screening by identifying the number of colonoscopies which result from inappropriate fecal occult blood testing (FOBT) in the Veterans Health Administration (VHA).
Methods: Inappropriate screening FOBT for fiscal year (FY) 2011 at a single VHA facility was derived using the Veterans Integrated Service Network 7 (VISN7) Corporate Data Warehouse. Inappropriate screening FOBT was defined as FOBT performed within nine years of a prior colonoscopy, four years of a CT colonography or double contrast barium enema, or 10 months of FOBT. FOBT conducted for diagnostic purposes, defined as inpatient testing or single FOBT card, was excluded. For a portion of the individuals who met criteria for inappropriate FOBT, a chart review was conducted to ensure accuracy of collection methodology. Results from the subset of cases which were chart reviewed were extrapolated to the total number of patients that met initial inclusion criteria.
Results: Of 7,765 screening FOBT performed at a single VHA facility in FY2011, 1,061 were inappropriate based on our inclusion criteria. The charts were reviewed for 275 (26%) of the 1,061 inappropriate FOBT cases, of which 259 were identified as true inappropriate FOBT. The remaining 16 FOBT were deemed appropriate due to the recommendation by the endoscopist to resume screening at an interval less than 10 years due to bowel preparation quality. Of the 259 inappropriate screening FOBT, 59 were positive, leading to 47 additional follow-up procedures (either colonoscopy or virtual colonography). Colorectal cancer was not detected in any of these procedures. Extrapolating to the cohort of 7,765 screening FOBT performed in a single VHA facility in FY2011, an estimated 999 screening FOBT (13%) were inappropriate. Of these, an estimated 228 (23%) were positive and led to approximately 181 unnecessary procedures.
Conclusion: FOBT for colorectal cancer screening is often overused and, if positive, exposes patients to additional tests and their associated potential risks. Several interventions may help to reduce this costly problem: improved visibility of non-VHA facility colonoscopy reports in the medical record; reminder systems which integrate all modalities of CRC screening conducted within VHA or entered by provider or staff based on non-VHA screening; and provider education regarding indications for FOBT.

1636

Thirty-day Readmission Rates Following Hospitalization for Gastrointestinal Hemorrhage in the United States

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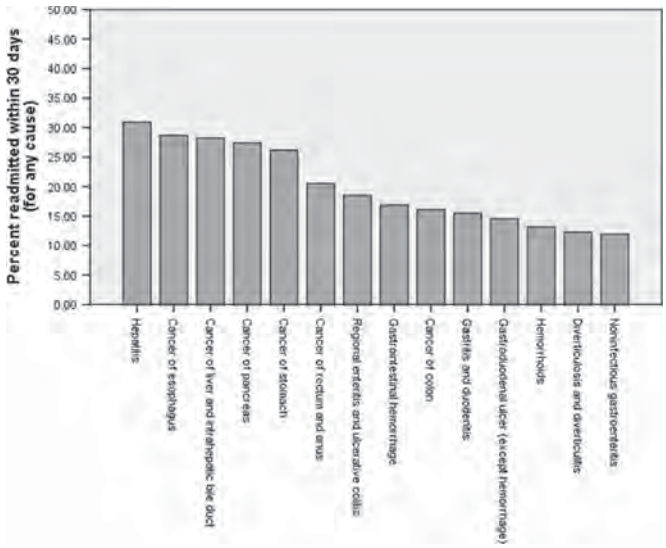
Purpose: Gastrointestinal hemorrhage (GIH) is a potentially life threatening condition that represents a significant clinical and economic burden in the U.S. with more than 300,000 hospitalizations annually at an estimated cost of $2.5 billion. Little is known about the prevalence and costs of readmission for this group. The aim of this study was to analyze 30-day readmissions following discharges related to GIH using a large national database.
Methods: The Nationwide Inpatient Sample (NIS) database was used for 2010. The NIS contains data from approximately 8 million hospital stays in 2010 in the U.S. Patients with Index stay 153 for gastrointestinal hemorrhage, using Clinical Classification Software (CCS) were included. Index stays are identified in January to November to allow for a 30-day readmission window for all index stays. Index stays require "live" discharge status and non-missing length of stay.
Results: There were 362,467 discharges with GIH as the primary diagnosis out of which 144,393 underwent upper gastrointestinal endoscopy with biopsy during hospitalization; 51,311 received a blood transfusion; 24,322 underwent colonoscopy with biopsy; 38,788 underwent other non-OR upper GI therapeutic procedures and 11,026 underwent other non-OR lower GI therapeutic procedures. There was readmission data available on 320,613 stays out of which 54,154 (16.9%) patients were readmitted for any reason within 30 days of discharge following GIH. Of these, 9,584 (3%) patients were readmitted with the same primary discharge diagnosis as before, i.e., GIH. 55% of the readmissions were males and 45% females. The mean cost per stay increased from $9,619 for the initial stay to $11,054 for readmissions with GIH. The 30 day readmission rates for GIH were mid-range compared to other common GI conditions as shown in Figure 1.
Conclusion: Based on a large inpatient database, in the U.S., GIH has a 17% all-cause readmission rate and a 3% GIH readmission rate within 30 days of discharge. The costs of these readmissions are significant. Efforts to improve care and reduce readmission rates appear warranted.



[1636] Figure 1.

1637

Single-center Experience with Gastrointestinal Bleeding in Patients Taking the New Oral Direct Thrombin Inhibitor Dabigatran

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Purpose: Dabigatran is a new direct thrombin inhibitor which is effective in stroke prevention in patients with atrial fibrillation and does not require INR monitoring, has fewer dietary restrictions and potentially less drug-drug interactions. Dabigatran is renally-cleared, raising the possibility of increased risk of bleeding in those with renal insufficiency. Furthermore, there is no reversal agent that may be used in the setting of acute bleeding. Anecdotal experience suggests that patients may be at increased risk of severe bleeding while taking this medication.
Methods: A single-center retrospective review of all atrial fibrillation patients admitted to Brooke Army Medical Center from November 2010 to October 2012 to evaluate the bleeding incidence, severity and characteristics of those taking dabigatran compared with warfarin.
Results: 310 patients were prescribed dabigatran between November 2010 and October 2012. 15/310 (4.8%) admitted with endoscopically confirmed gastrointestinal bleeding. The majority of patients were admitted with overt bleeding such as melena and/or hematochezia (13/15). Every patient taking dabigatran who was admitted for GI bleeding demonstrated small, but significant elevations in prothrombin time (PT), activated thromboplastin time (aPTT), and international normalization ratio (INR). All of which normalized with withdrawal of the medication.
Conclusion: Our reported GI bleeding incidence is higher than what was cited in the RE-LY study (2.7% all-cause major bleeding). This difference may be due to lack of experience with this specific medication by ordering physicians or subtle differences in the target populations.

1638

Knowledge of High School Students Regarding Risk Factors for Blood Borne Infection Transmission

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Purpose: This study was conducted to evaluate the knowledge level of high school students regarding risk factors for transmission of blood borne infection. Factors of interest in this study included vaccines, sharing of personal care items, methods used to eliminate pathogens, and Universal Health Precautions (UHP). UHP are recommended to prevent infection transmission between patients and health care workers. Even though the precautions were designed for hospitals, they should be used universally by people who do not wish to contract blood borne diseases. Health education is not a required part of high school education across the nation. This may be a particular problem for high school students who will be living outside their usual home environment in the near future. The aims were to evaluate the knowledge level of high school students regarding risk factors for transmission of blood borne infections.
Methods: The method used was the creation and distribution of a brief 13 question survey. The survey was sent to a private school in Arlington, Texas and dispersed among the freshmen, sophomores, and juniors. The target population consisted of 248 students with 184 (74%) completing the survey.
Results: The majority of students that completed the survey were Caucasians (63%). According to the survey, 82% of students had never heard of UHP with only 11% realizing that UHP applied to all people regardless of disease status. On protective vaccine availability, 70% knew of the HBV vaccine; however, 46% and 30% thought there were vaccines for HCV and HIV, respectively. Sixty percent lacked knowledge that use of bleach was the best method to clean up a blood spill. Fifty-four percent of students were unaware that using an infected persons toothbrush or razor blade could transmit blood borne infections. The majority were aware of sexual transmission of HIV (89%) and that HIV cannot be transmitted with an ink pen or hairbrush (85%).
Conclusion: We concluded that high school students lacked some basic knowledge of risk factors related to blood borne infection transmission. The majority of students were unaware of the importance of not sharing personal care items that are potentially contaminated with blood, how to clean up a blood spill, or handle an active bleeding episode where gloves may not be available. The high school students' awareness and knowledge of HIV transmission was higher than that for HCV. As most respondents thought there were vaccines for HIV and HCV, they may not utilize UHP when needed. UHP need to be a routine part of health education for teenagers. Programs to address issues related to transmission of blood borne infections and possible applications in teenagers' daily lives need to be developed.

1639

A Simplified Hydrophobic Attraction/PCR System for Isolation and Rapid Detection of *Mycobacterium tuberculosis* in the Gastrointestinal Tract: An *in vitro* Study

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Purpose: Three million deaths worldwide are attributed to TB and the incidence is on the rise. TB can affect the entire gastrointestinal tract and carries a mortality of greater than 10%. From a diagnostic perspective, TB is difficult to isolate early due to its culture requirements and inherent growth dynamics. It is important that all clinicians continue to remember that TB is a potential diagnosis in all patients presenting with features.
Methods: Biphasic systems in combination with PCR amplification can be utilized as a practical simplified methodology for isolation and rapid/specific detection of TB complex organisms for detection of these organisms in GI tract specimens. These organisms have a preference for hydrophobic surfaces when placed in a liquid phase where a hydrophobic solid phase has been introduced.
Results: Siliconized slides were utilized as a hydrophobic platform to attract or bait TB complex organisms. We had found that Middlebrook 7H9 Broth with 10% horse serum worked very well for hydrophobic baiting of TB complex organisms. The sensitivity of this system was further enhanced by the addition tetrazolium red viability indicator. The "in situ" could analyzed for the presence TB complex organisms via PCR amplification using TB specific IS6110 Primers, and also staining via Kinyoun acid-fast staining. We ran the in vitro assay in connection with reference strains of TB complex organisms and also with the type culture strain for TB complex which is strain H37RV. The assay was used in connection with the PCR Primer IS6110 which is known to be specific for TB Complex organisms. We ran this technique a total of 20 runs and found positive results in 100% of specimens analyzed. The initial time for TB in situ growth on the hydrophobic slides can take from 96 hours to 7 days. The time for performing a DNA extraction of in situ mycobacterial growth from a hydrophobic slide takes about is 60 minutes. A PCR amplification reaction using primers specific for the IS6110 Insertion Sequence which is the marker for TB complex organisms takes about 2 hours. A confirmatory agarose gel electrophoresis run takes about 1 hour.
Conclusion: The first novel point of our system is that we had added a viability indicator to show growth is occurring even before we could see colony forming units on the hydrophobic surface. Additionally the time that can be saved in comparison to standard TB diagnostics also has great clinical implications. The time needed to perform molecular based identification involving PCR amplification and agarose gel electrophoresis takes about 2 hours. This is the first time that the principal of hydrophobic attraction has been linked to PCR, and has clinical implications in diagnosing patients with TB in the GI tract.

1640

Quality of Colonoscopy Reporting among Gastroenterology Fellows: An Improvement Initiative

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Purpose: The Multi-Society Task Force on Colorectal Cancer (MSTF-CRC) generated specific quality indicators (QI) in 2002 and 2006 to improve quality and effectiveness of colonoscopy. Despite specific guidelines, colonoscopy reporting practices are widely variable. Appropriate documentation of colonoscopy findings offers a key approach to measuring quality. We performed a quality improvement project to assess and improve the quality of colonoscopy reporting among our GI trainees.
Methods: Colonoscopy reports prepared by eight fellows were selected for peer review for procedures performed from July 1 through July 30, 2012. Fifteen colonoscopy reports for each fellow were randomly selected, reviewed, and evaluated to identify inadequacies in documentation using the MSTF-CRC QI. A score was assigned to each report based on the number of QI missing from the report: Grade 1 - excellent (missing 0 QI), Grade 2 - good (missing 1 QI), Grade 3 - fair (missing 2-3 QI), Grade 4 - inadequate (missing 4+ QI). Two interventions were performed after the initial data was gathered: 1) a didactic conference on quality of colonoscopy reporting, including MSTF-CRC QI was presented by an attending physician from the GI Division to GI fellows and 2) MSTF-CRC QI guidelines were distributed in paper format to GI fellows. Post-intervention, 15 colonoscopy reports were randomly selected for each fellow between January 1 through April 18, 2013 with each report evaluated and scored using the same method as above. Student T-test and Fisher's Exact test were used for statistical analysis.
Results: Prior to the intervention, 4/8 (50%) of GI fellows had a majority of their report scores between good and excellent. After the intervention, 7/8 (87.5%) had a majority of their report scores between good and excellent. As a whole, there were a total of 27 excellent reports before intervention and 54 excellent reports after intervention ($p<0.01$). When compared as a group, scores improved post-intervention from an average of 2.16 to 1.69 ($p<0.01$).
Conclusion: Colonoscopy report scores among GI fellows significantly improved after a didactic review and receiving a handout of MSTF-CRC QI. Periodic review of recommendations may help to improve the quality and standardization of colonoscopy reporting among gastroenterology trainees.

1641

Health Literacy: A Pilot Study in a Community GI Clinic

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Purpose: Health literacy is defined as the ability to obtain, process, and understand basic information needed to make appropriate health decisions. Health literacy has a major impact on the improvement of quality of healthcare. In 2005, a tool was introduced to assess health literacy called the New Vital Sign (NVS) by Weiss et al. Since then, it has been validated in multiple studies. It is generally administered by an RN or MOA, and takes about 3 minutes to complete. It assesses general literacy and numeracy skills as applied to health information yielding an overall estimate of health literacy. We aimed to assess health literacy in an outpatient community GI clinic.
Methods: We enrolled 55 consecutive patients in an ambulatory GI setting. Informed consent was obtained prior to administering study instrument. The New Vital Sign was administered by a medical student after standard vital signs were obtained by medical assistant. Exclusion criteria were <18 years of age and visual/auditory impairment. When appropriate, the accompanying caregiver responsible for medical care was administered the test. The patient was given a nutrition label per protocol and then asked predefined questions in order to assess prose literacy, numeracy, and document literacy. The answers were scored correct or incorrect according to a predefined binary scoring key (1 point for each correct answer [maximum 6 points]).
Results: A total of 52 patients completed the test. One patient refused the test. Another patient stopped the study midway due to illness, and the third patient quoted the absence of corrective eyewear midway through the exam. The average time to complete the test was 3.5 minutes. The

number of correct items on the NVS ranged from 0 to 6 (mean=4.42). Of total patients surveyed, six (11%) patients scored 0-1, suggesting a high likelihood of limited literacy. Six patients (11%) scored 2-3, indicating the possibility of limited literacy. Forty patients (78%) scored 4-6, consistent with adequate literacy.
Conclusion: Our study showed more than 3/4 of our sample to be adequately health literate. More than 20% of patients seen did not possess adequate health literacy. Multiple data to date have demonstrated the importance of health literacy in screening and diagnostic efforts. Our data set suggests that the NVS can provide clinicians with valuable insight in our patients' level of health literacy. Further attention can then be focused on these patients so that they may effectively manage their disease which may ultimately result in improved quality of health care delivery.

1642

Comparing Belladonna Alkaloids/Phenobarbital with its Components and Placebo for the Management of Patient-reported Symptoms in Irritable Bowel Syndrome

Presidential Poster

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Purpose: To compare belladonna alkaloids/phenobarbital (BA/PH) to each component (BA, PH) and placebo (PB) for IBS symptom management.
Methods: Double-blind, RCT of IBS-C and IBS-D subjects treated for four weeks. Endpoints included patient-rated day and night pain, BM quality, and pain diaries along with clinician global evaluation of change. Change scores for ITT population were calculated as LOCF. Parametric data were analyzed by ANCOVA and linear mixed models; non-parametric data by Chi square, Kruskal-Wallis H, and Mantel-Haenszel test.
Results: 204 randomized subjects (50 BA/PH; 53 BA, 49 PH, 52 PB) comprised 63% female, 84% self-reported white, and mean (sd) aged 41.3 (14.7) years with IBS duration 54.9 (58.2) weeks. Demographics and baseline values were comparable. All treatment groups improved significantly from baseline to LOCF for day and night pain and from Visit 1 to LOCF for global evaluation. Only BA BM frequency increased significantly (p=0.015). Day pain, night pain, BM frequency, and global evaluation LOCF change scores were analyzed by ANOVA with treatment group and gender as main effects, covarying age and baseline day and night pain, revealing a significant gender effect (p=0.039). Significant treatment effects for females were due to differences in night pain (p=0.033) and global evaluation (p=0.012). Contrast effects indicated that females treated with BA/PH reported significant improvement in night pain when compared with those treated with PB (p=0.008) and PH (p=0.030). Contrast effects revealed that clinicians rated females treated with BA/PH more improved than those treated with PB (p=0.012) or PH (p=0.022). Compared to PB, effect sizes for BA/PH were 0.76 (Night Pain) and 1.07 (Global Evaluation). BA/PH subjects reported lower mean diary night pain scores than PB (p=0.007). For night pain-free weeks (6 consecutive days) BA/PH-treated females were 2.90 times more likely pain free than PB (p<0.001), 2.08 times more than BA (p=0.018), and 1.92 times more than PH (p=0.049) subjects. BM quality was not different across treatments.
Conclusion: BA/PH treatment significantly reduced self-rated night pain for females compared with PH and PB. Clinicians confirmed this result through global evaluation. The results were seen in diary data and by calculation of night pain-free weeks as well. The magnitude of these effects was substantial with effect sizes exceeding 0.75. Using the one-half standard deviation criterion, these results were clinically as well as statistically significant.
Disclosure - Dr. Turner - Consultant: PBM Pharmaceuticals Dr. Scranton - Consultant: PBM Pharmaceuticals.
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[1642]

Compared with belladonna alkaloids/phenobarbital (n=50)	Belladonna alkaloids (n=53)	Phenobarbital (n=49)	Placebo (n=52)
Δ Night Pain (mean, SE)	−0.179 (0.179)	−0.411 (0.187)*	−0.494 (0.182)**
Δ Global Evaluation (mean, SE)	−0.053 (0.299)	−0.726 (0.310)*	−0.772 (0.299)*

*P<0.05, **P<0.01.

1643

A Retrospective Review of the Clinical Impact of Hydrogen Breath Testing for Small Bowel Bacterial Overgrowth in South Texas Veterans Health Care System

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Purpose: The aim of our study is to assess the clinical impact of positive hydrogen breath testing for small bowel bacterial overgrowth in VA population.
Methods: The charts of 80 patients that were referred for hydrogen breath testing for suspect diagnosis of small bowel bacterial overgrowth were reviewed from July 2010-February 2013. Patients with positive hydrogen breath testing were identified and their charts were reviewed regarding the treatment modality and clinical response.
Results: Patients were referred for hydrogen breath tests due to primary symptoms of diarrhea, bloating, vitamin B12 deficiency, diabetes mellitus and abdominal pain. 18/80 (22.5%) patient referred had a positive test. All patients tested positive were treated with antibiotics. There were a total of 18 women and 62 men in the study. 72% of the patients with small bowel bacterial overgrowth who were treated with antibiotics had an improvement of their symptoms, however, this was not statistically significant (p-value 0.07). In our study there were more positive tests among females that underwent testing when compared to males (p-value 0.0113).
Conclusion: There was a gender difference for positive testing in our population. Despite small number of females in our study they had more positive tests. Overall symptoms improved with therapy in both groups however this was not statistically significant. In addition, we found that objective testing for response to therapy by repeat breath testing did not occur in any of the patients.

1644

Patient Characteristics, Outcomes, and Physician Management Strategies for Dabigatran (Pradaxa®) Related Gastrointestinal Bleeding Complications

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Purpose: We previously reported on a wide gap in knowledge and perception of proper dabigatran administration and the management of related gastrointestinal bleeding complications. In our current study we aimed to review sub-specialists' treatment strategies and experience with dabigatran related gastrointestinal bleeding. Additionally, in those patients identified as having a dabigatran related bleeding event we aimed to elucidate patient characteristics and management outcomes.
Methods: We created an anonymous survey to assess clinicians' clinical experiences, level of knowledge of proper dabigatran administration and preferred management approach to any related gastrointestinal bleeding events. Included in the study were all cardiology physicians employed in 2011 at the Beth Israel Medical Center, New York, NY. Additionally we collected demographic and outcomes data on patients identified as having dabigatran related gastrointestinal bleeding during 2011-2012.
Results: During the study period a total of 22 cardiologists responded to our survey. All of the respondents had cared for at least 1 patient and the majority greater than 5 patients taking dabigatran during the past year. Surprisingly the majority of respondents would give patients fresh frozen plasma and or vitamin K while only a small group would consider hemodialysis for life threatening bleeding and even fewer regularly take into account renal function when dosing dabigatran. A total of 13 patients were identified during the one year study period as having dabigatran related bleeding (Table 1). There were no in hospital mortalities reported. The location of bleeding was divided almost evenly between upper and lower gastrointestinal tracts. The bleeding events required blood transfusion in 42%, endoscopy in 23% and emergent surgery in 15% of patients. Notably only a minority of patients were taking either aspirin and/or Plavix in addition to dabigatran. Interestingly almost all of the patients were on proton pump inhibitor therapy as outpatients.
Conclusion: Despite our center's growing experience with dabigatran use, there continues to be a wide gap in physician knowledge and perception of dabigatran administration and the management of related gastrointestinal bleeding complications. As the utilization and popularity of dabigatran continues to expand there is an increasing need for more objective algorithms outlining the proper administration of dabigatran and management of related gastrointestinal bleeding complications. A larger targeted study is needed and currently being developed to provide patient specific evidence based management recommendations.

[1644] Table 1. Patient characteristics and management outcomes

Total Number Patients	13
Average Age	78 years
Average Length of Hospital Stay	10 days
Average Length of ICU Stay	0.4 days
A.Fib as indication for Pradaxa Use	92 %
Lower GI Bleeding	46%
Upper GI Bleeding	54%
Taking Aspirin and/or Plavix	38%
Taking Acid Suppression Medication as outpatient	95%
Patients requiring Blood Transfusion	7%
Patients who received FFP, Vitamin K, Cryoprecipitate or Platelets	42%
Patients Requiring Endoscopic Intervention	15%
Patients Requiring Surgical Intervention	23%

1645

The Proton Pump Inhibitor Time Problem: A Quality Improvement Pilot Study

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Purpose: At our institution a quality improvement study was undertaken to analyze the dosing times of PPIs in comparison to meal delivery times during one month on all wards. The purpose of the study was to examine whether our administration of PPIs on the wards was in line with to achieve optimal efficacy and symptom relief.
Methods: A one-month analysis of all patients receiving IV and oral esomeprazole was conducted through a chart review identifying time of administration of the medication. Additionally the time of tray delivery was noted for the units. Optimal dosing of proton pump inhibitors were those who received the medication within or up to 60 min before tray delivery. Sub-optimal dosing of PPIs where those who received the medication within or greater than 60 min after tray delivery.
Results: 808 orders were written for oral esomeprazole (40 or 20 mg) during the one-month analysis. 98% (796/808) of orders written were part of a daily dose regiment, while the remainders were part of one time bolus therapy. The average time of administration was 120 minutes after eating for 100% of these 796 orders (sub-optimal). 472 orders for IV esomeprazole (40 mg or 20 mg) were written during the one month analysis. 86% (408/472) of orders written were part daily dose regiment while the remainders were on BID therapy. The average time of administration was 150 minutes after eating for 100% of these 408 orders (sub-optimal).
Conclusion: 100% of patients receiving IV or oral PPIs were dosed sub-optimally. A sub-optimal PPI dose can limit efficacy, and can lead to inappropriate and costly dose escalations. The limitation of this study is that it is a one month pilot study; however we plan to expand this analysis at our institution and implement an educational program with house-staff, nursing, and pharmacy to move PPI dosing to 30 minutes prior to the average tray delivery time on our wards. We hope this intervention will lead to increased efficacy of PPIs and better patient outcomes. Although many people get a PPI, few get them in a timely manner.

1646

Outcomes Following Percutaneous Gastrostomy for Gastrointestinal Decompression at a Tertiary Care Center

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Purpose: Approximately 3% of all advanced malignancies are complicated by malignant gastrointestinal (GI) obstruction and paralytic ileus, often resulting in recurrent nausea and vomiting. These symptoms can severely impair the quality of life of those patients. Management options include GI decompression using nasogastric tubes, surgical gastrostomy or percutaneous gastrostomy (PG). The latter is infrequently performed for this indication and its outcomes are not well described in such patients. We aimed to determine the incidence of short-term mortality and complications in patients undergoing PG for GI decompression.
Methods: We performed a retrospective chart review of all patients who underwent PG for decompression at UT Southwestern teaching hospitals between January, 2005 and December, 2012. Procedures performed for feeding were excluded.
Results: Of a total of 1,436 patients who underwent a PG during the study period, 38 were for decompression. Of these, 28 were performed by interventional radiologists and 10 by gastroenterologists. Twelve (32%) patients were men and 26 (68%) were women. The mean age was 60.6 years (range, 30-86). Eighty percent of this cohort (n=31) had GI obstruction from an underlying cancer: ovarian (9), other gynecologic (7), colon (8), other cancer (7), while the rest had gastroparesis or intestinal pseudo-obstruction as the underlying reason. More than half of the patients (56%) also had ascites at the time of the procedure; none had cirrhosis. Moderate sedation was used in all but one patient. ASA class distribution was: 35 with class 3, 2 with class 2 and 1 with class 4. There were 3 short-term complications: 0 major and 3 minor. Two patients developed clogging of PG tube with one of them requiring PG exchange; and one had drainage of serosanguinous fluid from the stoma. The 30-day mortality was 37% (n=14); of those who died, 12 had ascites and 9 had metastatic cancer. Vital status on 4 patients was unknown.
Conclusion: In a large cohort of patients undergoing percutaneous gastrostomy for decompression, we observed high short-term mortality with more than one-third of the patients having died by 30 days. Presence of ascites and metastases may portend a worse prognosis. Very few procedure-related complications were noted. Future work should focus on cost-benefit analyses for PG when done for decompression, taking into account quality-of-life considerations.

1647

The Effects of Supervised Nursing Management in Intestinal Obstruction Patients with Ileus Tube Treatments

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Purpose: To investigate the effects of different nursing managements on the outcome of intestinal obstructive patients who need ileus tubes.
Methods: This study selected 78 cases of intestinal obstruction suitable for ileus tube treatment with patients' acknowledged consents from June 2008 to December 2010 in the First Hospital of Jilin University. The 78 patients were divided randomly into intervention group (n=40) and control group (n=38) with no significant difference in age, sex and abdominal surgical history between the groups. The patients in the control group accepted standardized nursing management, and the patients in the intervention group accepted full-time supervised nursing intervention. The effects of different nursing managements on abdominal symptom relief (abdominal pain relief, bloating relief, time for flatulence recovery, the first 24-hour drainage volume, the time for liquid-gas interface disappearance), as well as the ratings of patients satisfactions were analyzed.
Results: 1) The intervention group patients had significantly longer tube insertion (t=5.82,p=0.0001 comparing to control group) and earlier enteral nutrition starting time (t=3.63, p=0.0005, comparing to control group). 2) The intervention group patients had significantly earlier starting time for off-bed activities, with 90% of the intervention group patients started the activities within 24 hours, and only 52.63% of the control group patients started the activities within 24 hours (χ^2=13.44, p=0.0002). 3) Abdominal symptom relief: the intervention group was statistical significantly better than the control group in abdominal pain relief, bloating relief, time for flatulence recovery, the first 24-hour drainage volume, the time for liquid-gas interface disappearance, decrease of the waist circumference within 24 hours, recovery time of bowel sound (p<0.05). 4) Patient outcome: the intervention group cure rate is significantly higher than that of the control group (χ^2=4.7022, p=0.0301). 5) Patient satisfaction evaluation: patients in the intervention group were significantly more satisfied in the degree of psychological comfort, service attitude, and consulting efforts than those of the control group (p<0.005). However, there is no significant difference between the groups in the degree of physiological comfort.
Conclusion: Full-time supervised nursing intervention improves the cure rate of intestinal obstruction. It increases the insertion length of the ileus tube, advances the enteral nutrition starting time, improves abdominal symptom relief, and results in better patient satisfaction.

1648

Trend in Racial/Ethnic Disparity in Emergent versus Elective Colon Resection among Patients with Colon Cancer: Is the Gap Closing?

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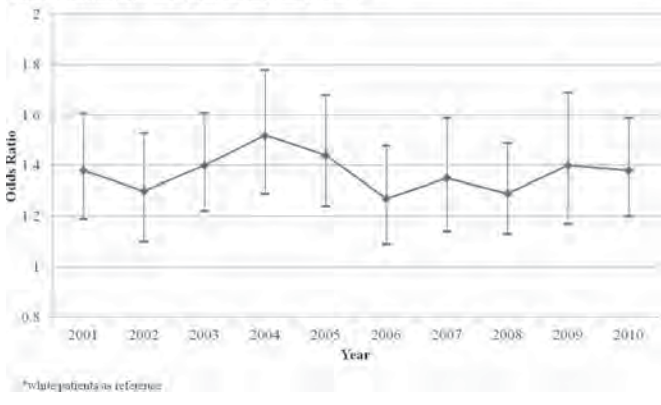
Purpose: To investigate the trend in racial/ethnic disparity in emergent colon resections among patients with colon cancer.
Methods: We utilized the Nationwide Inpatient Sample databases 2001-2010. Using appropriate ICD-9-CM procedure and diagnosis codes, adults patients aged ≥18 years with primary diagnosis of colon cancer who primarily underwent colon resection were identified. White and black patients were selected for comparison. Bivariate analyses compared the groups on patient and hospital characteristics. We used generalized linear models to assess the odds of undergoing emergent versus elective colon resection comparing white and black patients over time, adjusting for age, sex, primary payer, comorbidity index, income quartile, type of neoplasm (benign/malignant), surgical approach (open/laparoscopic), percent of black patients treated at a single hospital, hospital teaching status, location (rural/urban), and state variation. We applied discharge-level weights to obtain national estimates.
Results: The 134,309 patient records that met all criteria comprised 115,293 (85.8%) white patients and 19,096 (14.2%) black patients. Most were ≥ 60 years (76.3%), and had malignant disease (76.5%). Overall, black patients were more likely to be younger than 60 years of age (46.5% vs. 19.9%; p<0.001), be in the lowest income quartile (51.9% vs. 16.3%; p<0.001), and have benign disease (36.5% vs 21.4%; p<0.001). On multivariable analysis, overall, black patients had 39% higher odds of undergoing emergent colon resection (OR: 1.39; 95% CI: 1.31-1.46). Figure 1 shows the yearly trend in adjusted odds ratio for the 10-year period reviewed with white patients as the reference group.
Conclusion: Using a nationally representative database of patients in a recent decade, our study demonstrates persisting racial disparities among colon cancer patients in the likelihood of undergoing emergent versus elective colon resection.

Figure 1. Trend in adjusted odds ratio and 95% confidence interval of emergent versus elective colon resection comparing black and white patients*



*white patients as reference

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Blinding of Patients and Physicians during a One-year Randomized Clinical Trial of Dietary Interventions for Treatment of Crohn's Disease

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Purpose: Dietary interventions are frequently employed by patients for gastrointestinal disease management, without any evidence that they work. It is problematic to gather sufficient evidence for dietary interventions, partly owing to the difficulty in designing double-blinded clinical trials. Data on how to structure and administer dietary interventions that can maintain blinding is lacking.
Methods: In a one year-long pilot clinical trial designed to test the efficacy of two dietary interventions for the maintenance of Crohn's disease, we assessed blinding of study subjects (SS) and study physicians (SP) using visual analog scales (VAS) at each study visit. The interventions tested were a "Crohn's diet" (that restricts a variety of food items including specific sugars, wheat, all food additives and preservatives, etc.) and a fructooligosaccharide (FOS) supplement. A diet framework was employed grouping foods into three categories (namely, "foods to decrease the consumption of," "foods that are neutral" and "foods to increase consumption of"). A "placebo diet" was constructed based on healthy eating recommendations using the framework. The three study groups were as follows: 1) "Crohn's diet" intervention group taking a placebo supplement; 2) a FOS supplement intervention group having a "placebo diet;" and 3) a placebo group having a "placebo diet" and a placebo supplement.
Results: 54 subjects were randomized and VAS blinding data were available for 440 visits for SS and 434 visits for SP. There was no correlation between the SS and SP responses in VAS for the entire study and at each study visit (all p>0.05) except the last visit for the Crohn's diet group (Pearson's correlation=0.733, p=0.025). SS and SP were >75% confident that the subject is on active treatment in a mean of 26.6 % and 6.2% of the visits, respectively. By study group, mean percentage of visits in which SS and SP rated that they were >50% confident that the subject is on active treatment were as follows: In the FOS group, 39.0% and 40.7%; in the placebo group, 44.7% and 39.0%; in the Crohn's diet intervention group, 47.5% and 28.0%, (p=0.155 and 0.017, ANOVA), respectively for SS and SP. For SS, 43/153 (28.1%) visits for the FOS supplement intervention group, 12/161 (0.07%) visits for the placebo group and 42/126 (33.3%) visits for the Crohn's diet intervention group were correctly identified with 75% confidence as the patient taking their respective treatments.
Conclusion: It is possible to maintain adequate double blinding in randomized clinical trials of dietary interventions for gastrointestinal disease, by carefully structuring and administering a placebo diet.

1650

An Audit of Fecal Occult Blood Testing in Hospital Inpatients

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Purpose: The fecal occult blood test (FOBT) is a community-based screening tool for the early detection of colorectal cancer. Although not validated for use in inpatients, it is often used by hospital physicians for reasons other than asymptomatic screening. The purpose of this study was to profile its use in hospital and assess its impact on patient care.
Methods: Patient charts were retrospectively reviewed for all FOBTs conducted over a three month period in 2011 by the central laboratory supporting the three acute care campuses of Hamilton Health Sciences (Hamilton ON).
Results: A total of 229 patients had 351 tests performed. 52% were female and the mean age was 49 (range 1-104). A total of 80 (34.9%) patients had at least one positive test. The most common indications for testing were anemia (51.0%) and overt gastrointestinal bleeding (19.2%). Only one patient had testing performed for asymptomatic colorectal cancer screening. In only 20 cases (8.7%) were medications modified prior to testing and in only 21 cases (9.2%) was diet modified. Most patients (85.2%) were taking one or more medications that could result in a false positive result. Only 18 (7.9%) patients had digital rectal exams documented, of which 7 were positive. All patients with a positive digital rectal exam had endoscopic procedures that revealed a source of bleeding. Among 44 patients with overt gastrointestinal bleeding, 12 (27.3%) had endoscopic investigations delayed to await results of the FOBT. Five of these were still referred despite a negative FOBT.
Conclusion: The FOBT is often used inappropriately in the hospital setting. Confounding issues such as diet and medication use that may lead to false positives are often ignored. Use of FOBT in-hospital may lead to inappropriate management of patients, increased length of stay and increased direct medical costs. Use of the FOBT should be limited to validated indications only.

1651

Opioid Use Is Associated with Prolonged Gastric Transit Time in Hospitalized Patients Receiving Video Capsule Endoscopy

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Purpose: To investigate the effect of opioids on bowel transit time and completion rate in hospitalized patients undergoing video capsule endoscopy (VCE).
Methods: We performed a retrospective review of all hospitalized patients undergoing VCE since the implementation of a new electronic medical record (October 15, 2011 - March 31, 2013). Exclusion criteria included endoscopic placement. Demographic data, medical history, medications and indication for VCE were collected from the medical record. Gastric transit time (GTT), small bowel transit time, total transit time (TTT) and study completion were collected from the VCE report. Transit times were summarized using median and inter-quartile range (IQR) and compared by log-rank analysis. Multivariable logistic regression modeling was utilized with resultant odds ratios (OR) and 95% confidence intervals (95% CI).
Results: We performed 157 VCE that met study criteria. Patients without opioids within 48 hours of the VCE had a median GTT of 12 min, IQR 7 - 35 and patients with opioids within 48 hours had a median GTT of 42 min, IQR 12 - 87 (p=0.007). Patients without opioid use were also less likely to have a GTT > 45 min (22% vs. 46%, p= 0.005). There was a trend toward lower total transit times (TTT) in patients not receiving opioids, with a median TTT of 246 min, IQR 189 - 362 compared to 286 min, IQR 212 - > 480 in the opioids group (p= 0.13). There was not a significant difference in VCE completion rate (82% vs. 74%, p=0.28) or gastric capsule retention (2% vs. 5%, p=0.67) between the groups. Demographic data and medical history were similar. After multivariable logistic regression modeling, opioid use was associated with GTT > 45 min (OR 2.96, 95% CI 1.33, 6.61, p=0.008).
Conclusion: Opioid use within 48 hours of VCE was significantly associated with prolonged GTT in hospitalized patients. We also found a significant increase in GTT > 45 minutes with opioid use, a benchmark that has been associated with incomplete VCE in previous studies. Although we did not find a significant difference in completion rate with opioid use (perhaps related to sample size), we noted a trend toward longer TTT. This data suggests hospitalized patients should avoid opioids during the 48 hours prior to VCE ingestion to decrease incidence of prolonged GTT.

1652

Percutaneous Gastrostomy in Cirrhotics: An Outcomes Study

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Purpose: Malnutrition is a poor prognostic factor for many conditions, including cirrhosis. In fact, it has been established as an independent risk factor for post-liver transplant complications and graft failure. Patients with cirrhosis, just like those without, may occasionally encounter clinical situations that necessitate enteral feeding through a percutaneous gastrostomy (PG), such as after a stroke. However, a PG in such patients is traditionally felt to be contraindicated, without much supporting evidence. In fact, previous studies reporting outcomes following PG in cirrhotics are limited to case reports and a case series (PMID: 20855067). We previously reported 10.2% 30-day mortality post-PG in 1165 patients (Gastrointest Endosc. 2013 May;77(5):AB151) and with this current study, we aim to share outcomes (30-day mortality and complication-rate) after PG, specifically in cirrhotic patients.
Methods: We performed a retrospective chart review of all patients with cirrhosis who underwent a PG for feeding between January, 2005 and December, 2012 at UT Southwestern teaching hospitals.
Results: Of a total of 1,436 patients who underwent a PG during the study period, 28 were cirrhotics; 17 (61%) were men and 11 (39%) women. Sixteen procedures were performed by interventional radiologists and 12 by gastroenterologists. The mean age was 58 years (range, 33-81). Primary reason for PG in these patients was: stroke or head trauma (9), head and neck cancer (4), other cancer (3), and miscellaneous (12). Twelve (43%) patients had ascites at the time of the procedure. Mean MELD score was 11.4 (range 6-28). A majority of patients (82%) had an ASA score of 3 or more. All patients received peri-procedural antibiotics. Moderate sedation was used in all but 2 patients. Four patients (14%) died within 30 days of the procedure. The 30-day complication rate was 7%: 1 patient with stoma pain and 1 with stoma infection; both improved with conservative management.
Conclusion: Patients with cirrhosis did only slightly worse in their 30-day mortality (14% vs. 10%) compared to non-cirrhotic patients and had overall low rate of other complications. The 30-day mortality in our cohort is much less than what was previously reported (38.5% in 26 patients; PMID: 20855067). Further larger studies are needed to clarify the short-term mortality in this group as also to assess the effect of ascites on the same.

1653

Improving Camaraderie in a Gastroenterology Fellowship Program: To Socialize or Not to Socialize

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Purpose: Burnout, depression, and low quality of life among physicians is common and has been shown to be associated with negative effects on patient care including professionalism, commitment to patient care, and attention to detail. Our Division of Gastroenterology (GI) has sponsored a few activities throughout the academic year to enhance the social aspect of the division. In an effort to improve fellows' happiness, quality of life, and relationships with attending physicians, we established and participated in more frequent and regular social activities in our division.
Methods: A survey-based quality improvement initiative was performed in the Division of Gastroenterology at the University of Missouri - Columbia from August 2012 to June 2013. Fellows and faculty completed a pre- and post-intervention survey consisting of nine questions using an ordinal scale (1 = poor, 10 = excellent) regarding quality of life, happiness, and relationships with colleagues. A second-year fellow was chosen by consensus to be the social chair and established a list of social activities based on the academic calendar and clinical commitments to ensure maximal participation. Activities included an informal dinner, scavenger hunt, GI holiday party, March madness party, golf tournament, and a bike ride challenge. Statistical comparisons between the two groups were performed using paired student t-test and Fisher's exact test.
Results: Ten fellows and faculty completed each of the pre- and post-intervention surveys. A statistically significant improvement was observed after the intervention for camaraderie in the GI program (mean 7.7 vs 9.0, p<0.01), overall happiness level (mean 7.9 vs 8.6, p=0.01), satisfaction with GI program (mean 8.1 vs 8.8, p<0.01), relationship with faculty members (mean 8.1 vs 9.1, p<0.01), and relationship with other staff members (mean 7.6 vs 8.2, p=0.02). Fewer respondents reported a need for improvement in camaraderie in the division after the intervention but did not reach statistical significance (9 vs 5, p=0.14).
Conclusion: Social activities play an important role in our Division of Gastroenterology. This study shows significant improvement in fellows' happiness and relationships with faculty by participation in simple social activities enhancing camaraderie.

1654

Procalcitonin as Adjunct Biomarker for Severe *Clostridium difficile*-associated Diarrhea

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Purpose: Procalcitonin (PCT) has recently emerged as a useful adjunct in severe bacterial infections. Interferon (INF) -γ released in response to viral infections attenuates up-regulation of PCT, making it more specific for bacterial infections. The utility of PCT has been evaluated in various infections, such as pneumonia (community-acquired and ventilator-associated), severe sepsis and shock, urinary tract infection and febrile neutropenia. Few studies have investigated the use of PCT in acute intra-abdominal processes such as perforation, ischemia, acute appendicitis and pancreatitis. However, there has been no study to date evaluating the use of PCT in *Clostridium difficile*-associated diarrhea (CDAD). The incidence of CDAD (hospital- and community-acquired) continues to rise. Its severity is assessed by WBC count ≥15,000 or a serum creatinine level ≥1.5 times the baseline level. The aim of this study was to evaluate levels of PCT in patients with CDAD versus those with diarrhea of other etiologies, and assess the correlation between elevated PCT levels and severity of CDAD.
Methods: This study was conducted at a tertiary care center over a period of 16 months (February 2011 - July 2012). Data were collected from all patients with diarrhea irrespective of the admitting diagnosis. Patients with bacteremia, UTI, pneumonia or neutropenia were excluded. All these patients had serum PCT drawn on admission along with stool studies for *Clostridium difficile* antigen; if the latter was positive, confirmation was obtained using *Clostridium difficile* toxin assay by polymerase chain reaction. A total of 157 patients with CDAD and 512 with non-CDAD were included. WBC count and serum creatinine levels were obtained in all these patients (age 20-98 years). Medians and Interquartile ranges (IQR) were compared using Mann-Whitney test. Cutoffs, sensitivity and specificity were obtained from receiver operator characteristic (ROC) curve. The associations were determined by a linear regression.
Results: Patients with CDAD have much higher levels of PCT than patients with diarrhea of other etiologies. A PCT cutoff of 0.5ng/ml provided sensitivity of 90% and a specificity of 98%. Elevated WBC (≥15,000) and rise in creatinine ≥1.5 times baseline value were associated with higher PCT levels in patients with CDAD; for elevated WBC levels are r^2=0.04, p=0.013 and for rise in creatinine r^2=0.13, p<0.0001. The median for patients were 3.4 ng/L (IQR 1.5 to 12.8) while the median for controls were 0.27 ng/mL (IQR 0.14 to 0.41).
Conclusion: Procalcitonin may be a valuable adjunct biomarker in distinguishing diarrhea from CDAD.

1655

Demographic Factors Influencing Discharge Against Medical Advice (AMA) in Patients with Upper Gastrointestinal Bleeding and Abdominal Pain: A Study of 170 Emergency Department Discharges Against Medical Advice

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Purpose: The current discharge rate against medical advice (AMA) from Emergency Rooms (ER) is estimated at 0.1-2.7%. Discharge AMA is very serious for diagnoses such as gastrointestinal bleeding in which the etiology can range from mild gastritis to life-threatening variceal bleeding. This work aims to identify demographic factors contributing to the patient's decision to leave AMA from the ED.
Methods: The National Hospital Ambulatory Medical Care Survey (NHAMCS) is a limited access dataset that includes ED visit-based data. All patients who left AMA between years 2007-2009 who had the diagnosis of upper GI bleed and abdominal pain were analyzed. The following demographic factors were analyzed as potential risk factors for discharge AMA: age, sex, ethnicity, geographic region and urban status. In addition, we also investigated if h/o prior ER visits play a role in AMA decision.
Results: Among 104,566 documented ED visits, 1,135 (1.1%) of patients left AMA, which included 170 patients (14.9%) with diagnosis of upper GI bleeding and abdominal pain. Hispanics were significantly more likely than non-Hispanics to leave AMA (odds ratio [OR] 1.36; 95% CI: 1.19-2.56). Males had a significantly lower AMA rate than females (OR 0.40; 95% CI: 0.26-0.62). Age, geographic regions, and urban status did not affect AMA discharge rates. Patients with a history of 1-5 previous ED visits were more likely to leave AMA compared to patients presenting to the ER for the first time (OR 1.75; 95% CI:1.32-3.87).
Conclusion: Our study identifies demographic factors that play a role in a patient deciding to leave AMA. Hispanic ethnicity, female sex, and history of prior ED visits correlated with higher AMA visits. Age, geographic region, and urban status do not affect discharge AMA rates. An understanding of these demographic variables can help physicians identify patient populations at higher risk to leave AMA, which can be used to design strategies to reduce discharges AMA.

1656

Mathematical Formula to Estimate Reversal of Coumadin Mediated Coagulopathy with Fresh Frozen Plasma Infusion

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Purpose: Coumadin is one the top 20 drugs prescribed in the U.S. and is prone for multiple drug-to-drug interactions. The estimated annual number of emergency department visits for bleeding in these patients is close to 30,000 and gastrointestinal tract is the most common site of bleeding. Rashidi and colleagues developed a formula to estimate change in international normalized ratio (Delta INR) with fresh frozen plasma administration. In this study, we aim to validate the Rashidi formula to estimate Delta-INR in Coumadin mediated coagulopathy in patients presenting for GI bleeding.
Methods: In this retrospective cohort study, we reviewed electronic medical records of consecutive cohort of patients presented to emergency department with gastrointestinal bleeding and required FFP administration. Patients with variceal bleeding, advanced liver failure and consumptive coagulopathy were excluded. We also excluded patients who had INR of less than 1.5 at the point of admission, or INR was not measured within 8 hours of FFP administration. Medical records were reviewed by three physician researchers (internal medicine residents). Data was collected using a predefined form which included age, gender, liver failure, disseminated intravascular coagulation, INR before FFP administration, number of FFP administered, INR within next 8 hours. The observed INR was considered gold standard. Formula predicted INR = (0.57 x PreFFP INR)-0.72. The correlation was tested using Pearson correlation coefficient. Statistical analysis was performed using JMP statistical package version 10 (SAS Inc., Cary, NC).
Results: A total of 256 patients were enrolled. Mean age was 72 years (SD, 15 years). Median INR at admission was 2.26 (IQR 1.78-3.47). Median number of FFPs transfused was 2 (IQR 1-2) and 28 (11%) were transfused 3 units or more. Mean difference in predicted and post FFP observed INR was 0.14 (95% CI 0.07-0.20). On matched pair analysis, correlation between observed and predicted INR was significant, correlation 0.70 and two-tailed p value was <0.0001. Correlation was higher in cases where INR was checked with one unit of FFP transfusion compared to more than 1, (0.81 vs 0.67). Limitation: Retrospective study design. Time between FFP transfusion and INR check was variable.
Conclusion: The predicted INR after FFP transfusion using this simple formula has excellent correlation with corrected INR, especially when checked after one unit FFP. Time of INR check after FFP transfusion might be the cause for variability and needs prospective evaluation of the formula.

1657

Do Not Operate on My Patient Unless You Have Cut-through Tumor

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Purpose: To investigate the long term outcomes of patients with invasive malignant polyps with clear resection margins without surgical resection.
Methods: We compared the charts of 9 patients with invasive malignant polyps. Demographic data included age of diagnosis, family history, type of endoscopic resection, survival, endoscopist's findings, endoscopic polyp size, pathologic polyp size, histopathology.
Results: Out of our 9 patients, 5 opted for non-surgical intervention. In this non-surgical group, 2 patients had 2 mm resection margins. Two patients had 1 mm resection margins. One patient had infiltration of the stalk, with unclear resection margins. Two patients died from non-colon cancer related reasons. There were 4 patients that opted for surgical management. Three had resection margins of 1 mm, and one had infiltration of the stalk with unclear resection margins. There was 1 non-colon cancer related death in this group. There was no residual disease on surgical pathology on any 4 of the patients. The mean time of follow-up of our study was 6 years. Average time to death was 4.8 years. All 9 patients had follow-up colonoscopies with no residual disease. No patient died from colorectal cancer.
Conclusion: In patients with invasive malignant polyps with clear resection margins of at least 1 mm, surgical intervention does not appear to be necessary in this group. It is important to note for our surgical patients, pathology at time of resection showed no residual carcinoma. Most notably, no patient died from colorectal cancer.

1658

Comparison of Demographic and Clinical Variables Influencing Acetaminophen Overdose among Hispanics and Caucasians

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Purpose: With growing minorities, particularly Hispanics in the United States and easy accessibility of acetaminophen as an over the counter drug, it is important to understand the role of ethnic differences in acetaminophen related liver toxicity. We plan to study differences in demographic and clinical factors impacting outcomes between Hispanics (H) and Caucasians (C) patients presenting with acetaminophen overdose at our hospital in central valley, California.
Methods: ED visits attributable to acetaminophen overdoses were identified using ICD-9 codes between 2009 and 2011. Retrospective chart review for data collection was completed.
Results: A total of 381 patients (H 152, C 155, others 74) were identified. Hispanics were relatively younger than Caucasian counterparts (H 27.9 +-17.3, C 34.9+-12.1). There were no significant differences in two groups in terms of sex distribution and BMI (H 28.1, C 26.9). Hispanic patients had lower rates of chronic pain syndrome (C 34%, H 21.2%), depression (C 27.1%, H 16.6%) and other psychiatric illness (C 25.2%, H 12.6%). Both Hispanics and Caucasians had similar rates of diabetes, hepatitis, cirrhosis and malignancy. Hispanics had higher rates of suicidal or intentional overdose (H 76.3%, C 65.8%, p value 0.04) while Caucasian are more likely to overdose unintentionally (C 34.2%, H 23.7%, p value 0.04). Hispanics were also more likely to overdose on pure acetaminophen (H 58.1%, C 42.9%, p value 0.008) versus acetaminophen plus opioids (H 40.1%, C 51.3%). Caucasians patients who overdose on acetaminophen had significantly higher access to other prescription medications like benzodiazepines (C 25%, H 6%, p value <0.001), opioids with acetaminophen (C 36.8, H 21.9%, p value 0.004) and SSRIs (C 20.4%, H 9.3%, p value 0.006). There were no significant differences in mean ALT/AST levels (H 27/26, C 23/25), mean INR (H 1.2 +- 0.9, C 1.4 +- 1.1), Bilirubin (H 0.4, C 0.4), rates of intubation (H 4%, C 5.8%) and pressor support (H 1.3%,

C 4.5%). The rates of transplant referral (H 2.6%, C 2.6%) and mortality (H 1.3%, C 1.9%) were also comparable between two groups.

Conclusion: Hispanics are relatively younger and more likely to intentionally overdose on pure non prescription acetaminophen as compared to their Caucasian counterparts who had unintentional overdose of prescription acetaminophen. Hispanics had less access to other prescription medications like benzodiazepines, opioids and antipsychotics as compared to Caucasians. This difference is likely secondary to poor access to health care for prescription medications. The clinical outcomes however were comparable in both the groups.

[1658] Comparison of baseline and clinical characteristics

Characteristics	Hispanics	Caucasians	P value
Mean Age±SD (years)	27.9±17.3	34.9±12.1	< 0.001
Sex, n (%) Male Female	51 (33.6) 101 (66.5)	58 (37.4) 97 (62.6)	0.479
BMI, mean±SD	28.1±7.6	26.9±7	0.163
Medical History n *(%)*			
Chronic pain syndrome	32 (21.2)	54 (34.8)	0.008
Depression	25 (16.6)	42 (27.1)	0.02
Psychosis	19 (12.6)	39 (25.3)	0.006
Prior Overdose	4 (2.7)	5 (3.2)	0.51
Prior Suicide	6 (4)	14 (9)	0.10
Substance use	11 (7.3)	20 (12.9)	0.13
Alcohol use Medications at Overdose APAP Opioids with APAP	32 (21.6) 86 (58.1) 59 (40.1)	28 (18.2) 66 (42.9) 79 (51.3)	0.45 0.008 0.05
Reason for Overdose n *(%)*			
Suicidal/Intentional Unintentional	116 (76.3) 36 (23.7)	102 (65.8) 53 (34.2)	0.04
Mental Status n *(%)*			
Normal Altered	118 (77.6) 34 (22.4)	114 (74) 40 (26)	0.46

[1658] Clinical severity outcomes

Labs	Hispanics	Caucasians	P value
INR (mean±SD)	1.2±0.9	1.4±1.1	0.383
ALT (range)	27 (8–3159)	23 (4–6585)	0.45
AST (range)	26 (11–7830)	25 (10–13780)	0.512
Bilirubin (range)	0.4 (0.1–34.3)	0.4 (0.1–18.7)	0.95
Leucocytosis n (%)	9 (5.9)	20 (12.9)	0.05
Intubation n (%)	6 (4)	9 (5.8)	0.45
Vasopressor support n (%)	2 (1.3)	7 (4.5)	0.17
Mortality n (%)	2 (1.3)	3 (1.9)	0.52
Transplant referral n (%)	4 (2.6)	4 (2.6)	

1659

Does a Higher Framingham General Cardiovascular Risk Score Correlate with Poor Outcomes in Non-variceal Upper GI Hemorrhage? A Retrospective Study

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Purpose: The mortality rate of upper non-variceal gastrointestinal bleeding remains up to 7-10% despite current therapies. Most deaths are attributed to pre-existing cardiovascular disease. With the failure of improving mortality of non-varcieal upper gastrointestinal bleeding (UGIB) and increased disease burden of cardiovascular disease, it is reasonable to determine whether there is a relationship between cardiovascular risk factors and poor UGIB outcomes. In this study, we compare clinical outcomes of acute non-variceal UGIB between those who have high and low Framingham Risk scores for developing cardiovascular disease within 10 years.

Methods: This is a retrospective study of patients with acute non-variceal UGIB from July 2006 to December 2011. The inclusion criteria consisted of patients ≥30 and ≤74 years old who have the primary diagnosis of acute non-variceal upper GI bleeding by esophagogastroduodenoscopy. The exclusion criteria were patients <30 or ≥75 years old, history of esophageal/gastric varices, history of portal hypertension, prior gastro-duodenal surgery, history of esophageal or gastric malignancy, history of a CVD event ≥ 1 year of acute UGIB. A 2008 Framingham General Cardiovascular Risk Score was calculated for each case. A high risk cohort was greater than 20% and low risk less than 10%. Primary outcomes of each cohort included readmission rate <30 days, re-bleeding, occurrence of surgery, any endoscopic therapy and mortality.

Results: The number of cases of acute non-variceal UGIB that met criteria was 237. The demographic data and baseline characteristics between the two groups were not significant except for the characteristics associated with Framingham risk score. There were no clear statistically significant correlation between high risk and low risk Framingham Risk score patients in the primary outcomes assessed (Table 1). However, on logistic regression analysis of 30 day readmission rates, there was a statistically significant correlation with outpatient proton pump inhibitor (PPI) or histamine-2 blocker (H2 blocker) use (OR 4.438, CI 1.447-12.409) and endoscopic therapeutics (OR 3.426, CI 1.140-10.299) and vascular age (OR 1.101, CI 1.01-1.199) calculated by generalized Framingham risk score.

Conclusion: Long term cardiovascular risk score by Framingham risk score does not correlate significantly with outcomes of acute non-varcieal UGIB. The 30 day readmissions of non-variceal bleeding were influenced by PPI/H2 blockers, and use of endoscopic therapeutics and vascular age. Further study is warranted in the optimal treatment with proton pump inhibitors, especially in those on PPI or H2 blocker therapy as an outpatient.

[1659] Table 1. Outcomes of acute non-variceal UGIB in low versus high Framingham risk score

	Framingham low risk	Framingham high risk	P-value
30 day Readmission	0	12 (9.9%)	0.088
Rebleeding	4 (8.5%)	17 (13.9%)	0.584
EGD Therapeutics	13 (27.7%)	50 (41%)	0.194
Surgery	8 (17%)	11 (9%)	0.338
Death	0	3 (2.5%)	0.532

1660

Screening Colonoscopy Trends in Chronic Hepatitis C versus Non-chronic Hepatitis C Patients in a Community Hospital

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Purpose: Viruses are linked to approximately 20% of worldwide malignancies. Hepatitis C virus has a strong association with liver cirrhosis and hepatocellular carcinoma. Non-alcoholic liver cirrhosis has been shown to have an association with both colorectal adenocarcinoma and colorectal adenomas. Data is scarce regarding any association with hepatitis C and colorectal adenomas.

Methods: The sample included 1,183 consecutive patients who underwent colonoscopies from 2009 to 2011 after excluding those with colon cancer, inflammatory bowel disease, or incomplete colonoscopies. Fisher's exact χ^2 test for categorical variables and t-test for continuous variables was used to analyze data between groups. Logistic regression was performed to obtain odds ratios (OR). SAS 9.3 software was used to perform all statistical analysis.

Results: Although the adenoma detection rate was higher in the hepatitis C group 26.3% vs 20.2% in the non-hepatitis C group no statistical difference was found in the patients undergoing colonoscopy 1.02 (0.66,1.57). Furthermore evaluation of size greater than 10mm and multiple colorectal adenomas showed no significant difference between the groups 0.55 (0.16,1.90) and 1.12 (0.58,2.14) respectively. Location and size of largest colorectal adenoma was not significantly different between the groups (Table 2). A separate analysis looking at screening and diagnostic colonoscopies also failed to show statistical significance between the groups (Table 2).

Conclusion: Although trends in our data are showing a greater adenoma detection rate and a greater rate for multiple colorectal adenomas no statistical significance was found between the two groups. Future studies focused on duration of disease, extent of liver disease, genotype, and viral load are needed to further delineate a possible association.

Table 1. Characteristics of chronic hepatitis C and non-hepatitis C patients undergoing colonoscopy

	Non-Hepatitis C (n=1,008)	Hepatitis C (n=175)	P-value*
Age	57.2 +/- 9.8	56.0 +/-7.5	0.08
BMI	29.2 +/- 6.0	27.8 +/- 6.0	0.008
Sex – Female	556 (55.3%)	49 (28.0%)	<0.0001
Race:			
White	258(25.6%)	58(33.5%)	
Black	322(31.9%)	93(53.8%)	
Hispanic	367(36.4%)	17(9.8%)	
Other	61(6.1%)	5(2.9%)	<0.0001
Smoking – Yes	229(22.7%)	104(59.4%)	<0.0001
Alcohol – Yes	170(16.9%)	61(34.9%)	<0.0001
Diabetes – Yes	215(21.3%)	43(24.6%)	0.34
Hypertension – Yes	539(53.5%)	83(58.9%)	0.14
Dyslipidemia – Yes	338(33.5%)	26(14.9%)	<0.0001
Family history of colorectal cancer	83(8.2)	14(8.0%)	0.91

*Use $\chi 2$ test for categorical variables, and t-test for continuous variables

[1660A]

Table 2: Association between Chronic Hepatitis C and Colonoscopy Findings				
	Non-Hepatitis C (n= 1,008)	Hepatitis C (n=175)	P-value*	OR (95% CI)*
Adenoma	204(20.2%)	46(26.3)	0.93	1.02 (0.66, 1.57)
Adenoma >=10mm	33(3.3%)	6(3.4%)	0.34	0.55 (0.16, 1.90)
Adenoma >= 2	70(6.9%)	14(8.0%)	0.76	1.12 (0.58, 2.14)
Adenoma present in Proximal Colon	129(12.8%)	24(13.7%)	0.72	0.91 (0.54, 1.54)
Adenoma present in Distal Colon	103(10.2%)	26(14.9%)	0.24	1.37 (0.81, 2.32)
Largest Adenoma in Proximal Colon	109(10.8%)	23(13.1%)	0.74	0.91 (0.52, 1.58)
Largest Adenoma in Distal Colon	100(9.9%)	24(13.7%)	0.44	1.25 (0.72, 2.17)

Association of screening and diagnostic colonoscopy findings with chronic hepatitis C*				
	Hepatitis C and screening colonoscopy findings		Hepatitis C and diagnostic colonoscopy findings	
	P-value	OR (95% CI)	P-value	OR (95% CI)
Adenoma	0.32	1.31 (0.77, 2.21)	0.23	0.60 (0.26, 1.38)
Adenoma>=10mm	0.68	1.34 (0.34, 5.38)	N/A**	N/A**
Adenoma>= 2	0.84	1.09 (0.47, 2.55)	0.93	1.05 (0.35, 3.16)
Adenoma present in Proximal Colon	0.84	0.93 (0.49, 1.78)	0.67	0.80 (0.28, 2.25)
Adenoma present in Distal Colon	0.07	1.80 (0.95, 3.43)	0.81	0.89 (0.33, 2.41)
Largest Adenoma in Proximal Colon	0.97	0.99 (0.51, 1.93)	0.45	0.65 (0.21, 1.99)
Largest Adenoma in Distal Colon	0.13	1.69 (0.86, 3.31)	0.59	0.74 (0.26, 2.16)

* Use logistic model controlling Age, Sex, BMI, Race, Alcohol, and Tobacco
** The validity of the model fit is questionable for this category due to small sample size

[1660B]

1661

Overweight Patients Have Significantly Longer Colonoscopy Times, Additional Need for Sedation, and Worse Boston Bowel Prep Score

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Purpose: Colonoscopy time and bowel preparation are important factors in determining polyp and adenoma detection rates. The impact of BMI, however, has not been thoroughly studied in this regard. Our aim was to determine if overweight patients (BMI ≥25) have longer colonoscopy times (defined as 25 minutes or greater), additional need for sedation after starting the procedure, and lower Boston bowel prep scores (defined as BBPS ≤5) when compared to patients with normal BMIs.

Methods: All screening colonoscopy reports at an outpatient tertiary endoscopy center were reviewed from May 2012 to April 2013. Corresponding endoscopy reports, nursing notes, pathology, and patient characteristics were recorded manually. Results were compared using the Fisher's exact test and a p<0.05 was considered statistically significant.

Results: A total of 1,084 screening colonoscopies were reviewed, of which overweight patients represented 67% (n=725) of the study population. When comparing colonoscopy times, using 25 minutes as the time for an average colonoscopy, overweight patients had a significantly longer colonoscopy than normal weight patients (63% versus 37%, p=0.01). This association continued at further increments of 5 minutes (30 minutes and 35 minutes). More sedation medication was needed after the initial starting dose for colonoscopies in overweight patients (65% versus 35%, p=0.03). Furthermore, overweight patients had a lower BBPS (less than 5 BBPS) when compared to normal BMI patients (74% versus 25%, p=0.03), indicating a worse preparation (Table 1).

Conclusion: Overweight patients required more sedation after the initial starting medication dose for colonoscopies, and those colonoscopies took longer to perform when compared to normal weight patients. Furthermore, the Boston bowel prep score for overweight patients was significantly worse. This information should be considered by endoscopists when scheduling colonoscopies in overweight patients.

[1661] Table 1.

	Normal BMI (BMI < 24)	Overweight (BMI ≥ 25)	P-value
Population	359 (33%)	725 (67%)	
Total time ≥ 25 min	172 (37%)	289 (63%)	0.01
Total time ≥ 30 min	120 (39%)	184 (60%)	0.005
Total time ≥ 35 min	81 (39%)	125 (61%)	0.03
Additional Sedation	291 (35%)	540 (65%)	0.03
BPPS ≤5	40 (25%)	115 (74%)	0.03

1662

Advanced Adenomas and Multiple Adenomas Are More Likely to Occur in the Right Colon in the Overweight Patient

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Purpose: Advanced adenomas, sessile adenomas and multiple adenomas may pose a more aggressive behavior, putting the patient at higher risk for developing colon cancer. Our aim was to compare adenoma detection rate, rate of advanced and multiple adenomas overall and in the right colon in overweight (BMI >25) and normal-weight patients undergoing screening colonoscopy.

Methods: All outpatient screening colonoscopies performed at an outpatient tertiary academic medical center were reviewed from May 2012 to April 2013. Demographic data, polyp number, and anatomical location were retrieved from the endoscopy reports. Pathological reports were reviewed. Advanced adenoma was defined as an adenoma > 10 mm in size, presence of villous component and/or the presence of high grade dysplasia or cancer at histology. Results were compared using the Fisher's exact test and a p<0.05 was considered statistically significant.

Results: A total of 1,084 colonoscopies were reviewed. Overweight patients represented 67% (n=725) of the study population. When compared to normal weight patients, there was no statistical difference in the overall polyp and adenoma detection rates. There was a trend however for overweight patients to have a higher rate of multiple adenomas (>3) in the right colon than in normal weight patients (77% vs. 23%; p=0.06). Advanced adenomas were significantly more common in overweight patients (58% vs. 42%; p=0.014). Sessile serrated adenomas, tubulovillous adenomas and carcinoma in situ were more commonly found in overweight than normal weight patients (58% vs. 41%; p=0.005; Table 1).

Conclusion: Overweight patients seem to develop more significant lesions (both multiple adenomas and advanced adenomas) than normal-weight individuals. These lesions seem to occur more predominantly in the right colon. The highest possible quality colonoscopy should be carried out, with particular attention to the right colon in overweight patients.

[1662] Table 1.

	Normal BMI (BMI < 24)	Overweight (BMI ≥ 25)	P-value
Population	359 (33%)	725 (67%)	
Any Polyps Removed	317 (33%)	647 (67%)	0.64
Tubular Adenomas	199 (32%)	418 (67%)	0.52
Tubular Adenoma (3+), Right Colon	16 (23%)	54 (77%)	0.060
Advanced Polyps	71 (42%)	96 (58%)	0.014
Sessile Serrated, Tubulovillous, Carcinoma in situ	83 (41%)	118 (58%)	0.005

1663

Adverse Outcomes of Telaprevir versus Boceprevir Antiviral Therapy in Chronic Hepatitis C Cirrhotic Patients

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Purpose: Recent studies demonstrated that the current direct acting agents (DAA), Telaprevir (TVR) and Boceprevir (BVR) have promising results in achieving SVR in chronic hepatitis C (CHC) cirrhotic patients. However, very few studies evaluated the influence of DAA on liver cirrhosis patients, their response to treatment and the hematological changes during therapy.

Methods: We followed CHC cirrhotic patients receiving triple therapy with either TVR or BVR at the Liver Associates of Texas Hepatology Clinics. Informed consent was obtained before enrollment in our nonrandomized prospective cohort between July 2011 and May 2013. Response guided therapy with application of the futility rules was applied. Endpoints included outcomes and non-response to the DAAs as well as the hematological changes. SPSS statistics v19 was used for regression analysis and descriptive statistics.

Results: We enrolled 79 CHC patients who have liver biopsies (41 had compensated cirrhosis and 38 were non-cirrhotic). Of the cirrhotic patients, 35 received TVR and 6 received BVR with mean age 56.2 years (SD 7.36), mean BMI 30.95 Kg/m2 (SD 7.05) and 53.7% males. In the TVR group, 46% (16/35) of cirrhotic patients failed the triple antiviral therapy, compared to 28% (7/25) of those with no liver cirrhosis. 6% of cirrhotics group relapsed to TVR while 4% relapsed among the non-cirrhotic TVR patients. 9% of cirrhotics were non-responders to TVR while 12% of non-cirrhotics were non-responders to TVR. In the BVR group, 50% (3/6) of cirrhotic patients failed therapy, compared to 23% (3/13) of non-cirrhotics. 17% of cirrhotics group relapsed to BVR while none relapsed among the non-cirrhotic BVR patients. 33% of cirrhotics were non-responders to BVR while 15% of non-cirrhotics were non-responders to BVR.

Conclusion: The current FDA approved DAAs have significant hematological changes in cirrhotic patients during CHC therapy. There are variable rates of relapse and non-response to TVR vs BVR as reported in this analysis.

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[1663] Rates of development of anemia and thrombocytopenia in CHC cirrhotics

DMID toxicity Grades 1–4	TVR n/34	BVR n/6
Anemia (Hgb <10.5g/dL)	55.9% (19)	83.3% (5)
Thrombocytopenia (Platelets<100x109/L)	79.4% (27)	100% (6)

1664

Incidence of Influenza-like Illness in Pregnant Women with Autoimmune Disease and Women without Autoimmune Disease Who Do or Do Not Receive an Influenza Vaccination

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Purpose: Pregnant women with autoimmune diseases may be at higher risk of contracting influenza infection during pregnancy. It is unknown if the receipt of influenza vaccination during pregnancy is as protective for infection in these women compared to healthy women. We sought to determine if the incidence of influenza-like illness (ILI) among pregnant women who received an influenza vaccination differs for women with autoimmune diseases compared to healthy pregnant women.
Methods: Data were obtained from an ongoing prospective cohort study of pregnancy outcome among women in the U.S. and Canada conducted by the Organization of Teratology Information Specialists (OTIS). We enrolled pregnant women between 2009 and 2012 who had Crohn's disease, psoriasis, psoriatic arthritis, rheumatoid arthritis or ankylosing spondylitis, and healthy women without autoimmune disease. Women were interviewed at multiple standard time points during and after pregnancy; data were collected about receipt of influenza vaccination during pregnancy and dates in gestation, and any subsequent report of physician diagnosis of ILI. Using time varying vaccine exposure during pregnancy and adjusting for calendar months of pregnancy relative to the flu season, we estimated the hazard ratio (HR) and its 95% confidence interval (CI) for ILI in a Cox regression model comparing women who reported receipt of an influenza vaccine some time in pregnancy to women without vaccine during pregnancy and including autoimmune disease status and the interaction between autoimmune disease status and vaccination receipt in the model.
Results: There were 1,508 subjects available for analysis: 1,003 women received the influenza vaccine during pregnancy and 505 women did not receive vaccine. Among them 520 women had autoimmune disease and 988 women were without autoimmune disease. Eighteen (3.5%) of the women with autoimmune disease and 55 (5.6%) women without autoimmune disease reported ILI at some time in pregnancy. The adjusted HR for ILI in women vaccinated vs. women not vaccinated was 1.17 (95% CI 0.63, 2.17). The interaction between vaccine exposure and autoimmune disease was not significant (p=0.13).
Conclusion: Based on these data, women with autoimmune disease were no more likely to report ILI than healthy women, and there was no evidence of a differential effect of influenza vaccination in risk of ILI among women with autoimmune disease.

1665

Inappropriate Prescription of Proton Pump Inhibitors Upon Hospital Discharge

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Purpose: Proton pump inhibitors (PPI) are amongst the most commonly prescribed medications in the United States. They have many uses but are often prescribed without appropriate indications. PPI use has been associated with *Clostridium difficile*-associated diarrhea, community-acquired pneumonia, and increased risk of spontaneous bacterial peritonitis among cirrhotics. Long-term PPI use is also associated with increased risk of osteoporosis and hip fractures, as well as reduced efficacy of bisphosphonates and low-dose aspirin. Aims of this study are to identify the frequency of inappropriate PPI prescriptions upon discharge and to identify the reasons for such prescriptions by the internal medicine service at Harbor-UCLA Medical Center (HUMC), a large public teaching hospital in Los Angeles, California.
Methods: This is a retrospective chart review study performed for quality improvement at HUMC. We identified patients discharged by the internal medicine service from May through June 2012 who were discharged with PPI prescriptions. Prescription appropriateness was determined according to indications listed in official drug information, as well as those supported by review of scientific literature. Appropriate indications identified were symptomatic gastroesophageal reflux disease, peptic ulcer disease, *H. pylori* eradication, pathologic secretory conditions, gastritis, Barrett's esophagus, and stress ulcer prevention if the patient had: NSAID use with concomitant use of corticosteroids, warfarin, history of ulcer/gastrointestinal hemorrhage, aspirin or age above 65 years; aspirin use with concomitant corticosteroids, warfarin, or clopidogrel.
Results: Of 97 patients discharged with PPI prescriptions, 47% (46/97) had no indication for PPI. Of the 46 patients inappropriately discharged with PPI, 28% (13/46) were started upon admission and, among these, over 60% (8/46) were initiated for stress ulcer prophylaxis on admission order sets; 33% (15/46) were present on admission without indication and continued upon discharge; 39% (18/46) were started during admission and continued upon discharge and, of these, 17% (3/46) were started during admission for appropriate indications but continued for an inappropriate duration.
Conclusion: Nearly half of the study patients were inappropriately discharged with PPI prescriptions; most prescriptions were a continuation of PPI therapy initiated prior to admission as well as PPI started during admission. While the increasing concern regarding potential harm of PPI therapy is controversial, increased effort must be made to ensure these medications are prescribed for appropriate indications. Our study identifies great potential for quality improvement regarding prescribing practices.

1666

Hba1c Is Associated with Colorectal Adenoma: Results from a Community Hospital Registry

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Purpose: Previous studies on life style for colorectal cancer risk suggest that glucose and diabetes are associated with colorectal adenomas. We set out to look for associations between HbA1c level and whether this association was greater depending on level of HbA1c.

Table 1. Characteristics of diabetic and non-diabetic patients undergoing colonoscopy

	No Diabetes (n=1,561)	Diabetes (n=437)	P-value*
Age	53.9 +/- 14.2	59.6 +/-9.5	<0.0001
BMI	28.5 +/- 5.7	30.1 +/- 6.6	<0.0001
Sex – Female	814 (52.3%)	226 (51.7%)	0.84
Race:			
White	291(18.7%)	79(18.1%)	
Black	510(32.7%)	169(38.9%)	
Hispanic	669(42.9%)	152(34.9%)	
Other	90(5.8%)	36(8.3%)	0.006
Smoking – Yes	375(24.0%)	104(23.8%)	0.92
Alcohol – Yes	302(19.4%)	66(15.1%)	0.04
Hypertension – Yes	617(39.5%)	344(78.7%)	<0.0001
Dyslipidemia – Yes	330(21.1%)	263(60.2%)	<0.0001
Family history of colorectal cancer	131(8.4%)	24(5.5%)	0.02

*Use χ2 test for categorical variables, and t-test for continuous variables.

[1666A]

Table 2. Association between diabetes and colonoscopy findings

	No Diabetes (n= 1,561)	Diabetes (n=437)	P-value*	OR (95% CI)*
Adenoma	297(19.0%)	89(20.4%)	0.14	0.80 (0.59, 1.08)
Adenoma >=10mm	48(3.1%)	17(3.9%)	0.95	0.98 (0.51, 1.89)
Adenoma >= 2	97(6.2%)	36(8.2%)	0.80	0.95 (0.61, 1.47)
Adenoma present in Proximal Colon	172(11.0%)	51(11.7%)	0.09	0.73 (0.50, 1.06)
Adenoma present in Distal Colon	164(10.5%)	52(11.9%)	0.77	0.95 (0.65, 1.37)
Largest Adenoma in Proximal Colon	150(9.6%)	47(10.8%)	0.32	0.82 (0.55, 1.21)
Largest Adenoma in Distal Colon	157(10.1%)	47(10.8%)	0.69	0.92 (0.63, 1.36)

Diagnostic	HbA1C <6.5* (n= 426)	6.5<= HbA1C <=7.5 (n=148)		HbA1C >7.5 (n=178)	
	N (%)	N (%)	OR (95% CI)**	N (%)	OR (95% CI)**
Adenoma	87 (20.4)	28 (18.9)	0.83 (0.50, 1.38)	34(19.1)	0.79 (0.49, 1.29)
Adenoma >=10mm	18 (4.2)	2 (1.4)	0.29 (0.06, 1.32)	9 (5.1)	1.07 (0.42, 2.67)
Adenoma >= 2	28 (6.6)	5 (3.4)	0.32 (0.12, 0.89)	16 (9.0)	1.10 (0.55, 2.17)
Adenoma present in Proximal Colon	49 (11.5)	20 (13.5)	1.00 (0.55, 1.82)	16 (9.0)	0.67 (0.35, 1.26)
Adenoma present in Distal Colon	49 (11.5)	12 (8.1)	0.65 (0.32, 1.31)	25 (14.0)	1.10 (0.63, 1.95)
Largest Adenoma in Proximal Colon	45 (10.6)	14 (9.5)	0.81 (0.41, 1.61)	16 (9.0)	0.79 (0.41, 1.52)
Largest Adenoma in Distal Colon	45 (10.6)	14 (9.5)	0.87 (0.45, 1.70)	21 (11.8)	0.98 (0.54, 1.79)

Screening	HbA1C <6.5 * (n= 209)	6.5<= HbA1C <=7.5 (n=89)		HbA1C >7.5 (n=83)	
	N (%)	N (%)	OR (95% CI)**	N (%)	OR (95% CI)**
Adenoma	35 (16.8%)	16 (18.0%)	1.11 (0.56, 2.19)	24 (28.9%)	2.16 (1.15, 4.05)
Adenoma >=5mm	9 (4.3%)	5 (5.6%)	1.41 (0.44, 4.51)	12 (14.5%)	3.73 (1.43, 9.68)
Adenoma >=2	7 (3.4%)	5 (5.6%)	1.86 (0.55, 6.27)	11 (13.3%)	4.89 (1.72, 13.88)
Adenoma present in Proximal Colon	22 (10.5%)	11 (12.4%)	1.29 (0.57, 2.90)	19 (22.9%)	2.70 (1.31, 5.57)
Adenoma present in Distal Colon	17 (8.1%)	7 (7.9%)	0.93 (0.37, 2.37)	11 (13.3%)	1.83 (0.79, 4.23)
Largest Adenoma in Proximal Colon	19 (9.1%)	9 (10.1%)	1.26 (0.52, 3.07)	14 (16.9%)	2.20 (0.98, 4.90)
Largest Adenoma in Distal Colon	17 (8.1%)	6 (6.7%)	0.75 (0.28, 2.00)	10 (12.1)	1.58 (0.67, 3.73)

*Reference group * * Use logistic regression model controlling Age, Sex, BMI, Race, Alcohol, Tobacco and history of hypertension or dyslipidemia.

[1666B]

Methods: The sample included 1,998 consecutive patients who underwent screening colonoscopies from 2009 to 2011 at a community hospital in East Meadow, New York, after excluding those with colon cancer, inflammatory bowel disease, or incomplete colonoscopies. Statistical analysis was performed using Chi-squared for categorical variables and t-test for continuous variables with age-, gender-, and race-adjusted odds ratios and their 95% confidence intervals (CIs) between HbA1c and diabetes with the presence of colonic adenomas were estimated using unconditional logistic regression model. SAS version 9.3 software was used to perform all statistical analysis.
Results: When looking at combined data of both diagnostic and screening colonoscopies no association could be found between diabetes and the presence of colorectal adenoma over those without diabetes. When looking by level of controlled diabetes with a level below 6.5 vs 6.5-7.5 vs over 7.5 no association could be found between either the presence, size, location or number of adenomas. However when looking at only screening colonoscopies there was an association found between Hba1c level greater than 7.5 and the the presence of colorectal adenomas 2.16 (1.15,4.05).
Conclusion: We found HbA1c >7.5 values were positively associated with colorectal adenoma presence, size, location, and number when looking at screening colonoscopies.

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INFLAMMATORY BOWEL DISEASE

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Characteristic of Patients with Inflammatory Bowel Disease Who Reside in the Department of Corrections in Connecticut

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Purpose: Inflammatory bowel diseases are significant problems in the United States and developed countries. It has become more recognized in patients of other ethnicities, such as African American, Hispanic and Asian although it may be under-recognized and under-reported. In this retrospective descriptive study, we tried to assess the characteristics of incarcerated patients who present to the state hospital with a known diagnosis or symptoms of inflammatory bowel disease. We also tried to determine how these patients are being treated and if the recommended health maintenance is followed.
Methods: Retrospective study of department of correction patients who were seen in a GI clinic at University of Connecticut from 10/01/2001 to 10/01/2011. All patients with IBD aged 18 and above were included, while pregnant, breastfeeding patients and patients younger than 18 were excluded. Demographic data were collected and analyzed. Categorical variables were expressed in percentages, and continuous variables were expressed as means.
Results: 93 incarcerated patients with IBD were seen in the GI clinic during the defined period, but only 65 charts were included due to incomplete data on the others. 64 patients were male with only one female, 26 had Crohn's disease (40%), 35 had ulcerative colitis (40%), and four had indeterminate colitis (6%). More than two thirds of patients (72%) were initially diagnosed after incarceration. More than half were Caucasian (54%), while the rest were African Americans (28%), Hispanics (18%) and others. A significant number have co-existing hepatitis C (15%). Low levels of 25 hydroxyvitamin D were seen in eight patients, but an overwhelming number of patients (80%) were not tested for vitamin D levels. Majority of patients were recommended to have DEXA scans done, but only one patient had the test performed. A vast majority of patients (94%) were managed with 5-ASA. In addition to 5-ASA, patients were given steroids (78%), 6-MP (37%), infliximab (15%), azathioprine (8%), and only 1.5% were given cyclosporine, methotrexate, natalizumab, adalimumab, certulizumab.
Conclusion: The majority of individuals who enter the department of corrections with symptoms of IBD are diagnosed after incarceration. This can be explained in part by the lack of access to health providers prior to the incarceration. Their entry into the system allows them access to healthcare via the state hospital, and ensures close follow up. The composition of patients shows a disproportionately large group of non-Caucasians (46%), although the total number of prisoners are unknown to us. Many of these patients were treated with immunomodulators, which may indicate more severe disease in the population. Routine health maintenance also needs to be addressed in more patients.

1668

Pseudomembraneous Negative *Clostridium difficile* Colitis in Patients with Inflammatory Bowel Disease Undergoing Colonoscopy: Retrospective Review

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Purpose: Patients with inflammatory bowel disease have increased risk of developing *Clostridium difficile* infection. According to registry database, 10% of inflammatory bowel disease patients will develop a *Clostridium difficile* infection at some point in their lifetime. Rates of *Clostridium difficile* infection among inflammatory bowel disease patients appear to be increasing in some institutions. A high index of suspicion and prompt diagnosis is required when evaluating inflammatory bowel disease patients with apparent relapse, to rule out coexisting *Clostridium difficile* colitis. According to some reports, endoscopic and biopsy findings in inflammatory bowel disease patients with *Clostridium difficile* infection do not reveal features of pseudomembranous colitis. Objective: The aim of this study is to review the incidence of endoscopic and pathological features of pseudomembranous colitis in patients with coexisting inflammatory bowel disease and *Clostridium difficile* infection.
Methods: We carried out a chart review of patients with history of inflammatory bowel disease (ulcerative colitis and Chron's colitis) with symptoms and signs of exacerbation of the disease, who had undergone colonoscopy (with stool aspirate and biopsy) as part of their work-up between October, 2009 and September, 2012. The demographic characteristics, type of inflammatory bowel disease, colonoscopy findings, biopsies, and stool aspirates were analyzed.
Results: A total of 93 inflammatory bowel disease patients who had undergone colonoscopy (with stool aspirate and biopsy) for inflammatory bowel disease-related symptoms were identified. Out of the 93 patients, endoscopy findings revealed signs of inflammation (ranging from erythematous mucosa to ulceration) were reported in 83 patients. Diagnosis of *Clostridium difficile* infection was confirmed in seven of these patients, based on positive colonic stool aspirate for *Clostridium difficile* toxin. None of these seven patients had endoscopic or histological features of pseudomembranous colitis (Table 1).
Conclusion: Endoscopic and histological findings were not helpful in making the diagnosis of *Clostridium difficile* colitis in inflammatory bowel disease patients because of the absence of pseudomembranous features. Colonic stool aspirate was required to make the diagnosis of *Clostridium difficile* colitis in the inflammatory bowel disease patients.

[1668] Characteristics of patients with exacerbaton of inflammatory bowel disease who had undergone colonoscopy

Parameter	CD positive[a]	CD negative[a]	PMC[b]
Age in years (range)	24–57	21–82	—
Male	4	39	0
Female	3	47	0
Diagnosis with respoect to inflammatory bowel disease			
Chron's colitis	2	43	0
Ulcerative colitis	5	29	0
Ischemic	0	2	0
Normal	0	10	0
Endoscopic and Histological findings			
EndoscOpic abnormalities	7	76	0
Histological abnormalities	7	76	0
Normal	0	10	0

[a]CD: Clostridium Difficile toxin in colonic stool aspirate.
[b]PMC: Pseudomembranous colitis.

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Age-associated Higher Disease Activity and Lower Quality of Life among Patients with Inflammatory Bowel Disease at a Tertiary Referral Center

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Purpose: Younger age at diagnosis is associated with more aggressive phenotypes in Crohn's disease (CD) and ulcerative colitis (UC). We evaluated the effect of age at initial visit on disease activity and disease-specific quality of life over time in a tertiary referral IBD cohort.
Methods: Retrospective cohort study in IBD patients identified from an IRB-approved clinical data repository from July, 2004 to July, 2012. We compared age at index visit (<40 years, 40-59 years and age ≥ 60 years) with disease activity as measured by the Harvey Bradshaw Index (HBI) for CD, and the Simple Clinical Colitis Activity Index (SCCAI) for UC. Disease-specific quality of life was measured by the SIBDQ (Short Inflammatory Bowel Disease Questionnaire). Repeated measures linear regression was used to assess this association over time, adjusted for confounding variables.
Results: 609 patients with CD and 310 patients with UC were included. 45% were male, 79% were Caucasian. Mean disease duration was 9.4±9.9 years. 16% were current smokers, 27% were former smokers, and 57% were never smokers. After adjustment for sex, smoking status and disease duration, at index visit, CD patients age 40-59 had higher mean HBI scores (5.7 ± 0.5) and lower mean SIBDQ scores (42.6 ± 1.2), compared to patients over age 60 (HBI 3.8 ± 0.5, SIBDQ 48.0 ± 1.6) (p<0.001). Over time, all CD patients demonstrated improvement in HBI and SIBDQ scores. However, HBI score improvement was less pronounced in the youngest patients (p<0.001), while improvement in SIBDQ scores did not differ between age groups (p=0.38). Patients with UC under age 40 at the index visit had lower SCCAI scores (3.2 ± 0.3) compared to older patients 40-59 (4.0 ± 0.4, p <0.001) (Figure 2), and higher SIBDQ scores (51.0 + 1.5) compared to patients age 40-59 (SIBDQ 47.1 ± 1.8, p<0.0001). All patients with UC demonstrated improvement in SCCAI and