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LOUISIANA CHAPTER

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EPOSTERS KIOSK #1

KIOSK ONE

ePoster #1 | Education | Abdominal/Laparoscopy

Resident Confidence in Robotics Versus Laparoscopic Surgery

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Background: The use of robotic platforms for common general surgical procedures is rapidly increasing. From 2012 to 2018 the use of robotic surgery increased from 1.8% to 15.1% of cases. There is a paucity of research evaluating the impact of this rise on the laparoscopic training experience of general surgery residents. This pilot study aims to examine the confidence of general surgery residents performing laparoscopic and robotic operations.

Methods: General surgery residents at a single institution in the southeast were surveyed regarding their confidence performing various operations laparoscopically versus robotically. Resident demographics and number of laparoscopic and robotic case totals were also collected.

Results: Sixteen responses were received for a response rate of 47.1%. At least 2 residents from each post-graduate year responded. Confidence levels per PGY level were similar between laparoscopic and robotic approach for appendectomy, cholecystectomy, and inguinal and ventral hernia repair. Confidence levels of PGY 3-5 residents were greater robotically compared to laparoscopically for right and left colectomy, paraesophageal hernia repair, and roux-en-y gastric bypass.

Conclusion: This preliminary data suggests current trends may result in decreased surgeon confidence in complex laparoscopic operations at graduation. Further data collection will include surveys to residents at other institutions to determine whether this is institutional or a national phenomenon.

ePoster #2 | Clinical Science | Abdominal/Laparoscopy

Recurrence Rate of Symptomatic Hiatal Hernias after Roux-En-Y Gastric Bypass vs. Sleeve Gastrectomy

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Background: Morbidly obese patients are at significantly increased risk for developing hiatal hernias (HH) and gastroesophageal reflux disease (GERD), with incidence rates reaching 40% and 70%, respectively (Che 2013, Fontan 2020). For those who do not respond to lifestyle changes and medical treatment, the standard surgical approach is hiatal hernia repair with anti-reflux fundoplication. However, morbidly obese patients (BMI >35 kg/m^2) are at higher risk for HH recurrence after surgery due to increased intraabdominal pressure, which puts additional tension on the crural closure (Perez 2001). Consequently, many surgeons recommend concurrent weight loss surgery rather than fundoplication in this patient population.

Multiple studies have demonstrated that performing hiatal hernia repair during bariatric surgery is a safe and effective strategy for addressing GERD in morbidly obese patients (Mahawar 2015, Bakhos 2019, Janik 2020). Roux-en-Y gastric bypass (RYGB) is favored over sleeve gastrectomy (SG) due to its superior GERD symptom resolution and greater weight loss, which may further reduce the risk of HH recurrence (Bakhos 2019). However, there is limited data evaluating the recurrence of HH following repair at the time of bariatric surgery, and no studies directly comparing recurrence rates between RYGB and SG.

This study aims to compare the recurrence rates of symptomatic HH following repair during gastric bypass versus sleeve gastrectomy. We hypothesize that the recurrence rate of symptomatic HH will be lower after RYGB compared to SG. Secondary endpoints include the presence of GERD without HH recurrence, time to recurrence, the need for medical or surgical reintervention for recurrent GERD, weight loss, and improvements in comorbid conditions.

Methods: After approval from the Institutional Review Board, a retrospective chart review was conducted to identify patients who underwent concomitant hiatal hernia repair (HHR) during laparoscopic sleeve gastrectomy or Roux-en-Y gastric bypass. The Ochsner Medical Center Epic database was queried for procedures coded as “gastrectomy, sleeve, laparoscopic” and “gastroenterostomy, laparoscopic” from 10/1/2011 to 8/5/2021. Only procedures performed by the three full-time fellowship-trained Bariatric Surgeons at Ochsner's Bariatric Center of Excellence were included. Operations for non-bariatric reasons, such as oncologic or reconstructive surgery, were excluded. Operative notes were reviewed to identify cases of concomitant HHR, as not all were coded or billed. Additional surgeries (e.g., gastric band removal, cholecystectomy, ventral hernia repair) were included, as were sleeve gastrectomies converted to bypass. Demographic data including sex, age, race, preoperative body mass index (BMI), excess body weight (EBW), and comorbidities were collected. Resolution of comorbidities was assessed at 3 months, 6 months, 1 year, and 3 years post-op by reviewing medications. Delta BMI and percent excess weight loss (%EWL) at 2 weeks, 3 months, 6 months, and 1 year were recorded. Patients not seen at these intervals were excluded. Charts were reviewed for recurrent GERD symptoms through progress notes and active medication lists. Diagnostic evaluations (EGD, upper GI barium swallow, or chest/abdominal CT) were examined for evidence of recurrent hiatal

hernia. Time to recurrence was defined as the number of months from bariatric surgery to the date GERD symptoms or diagnostic evidence of recurrent HH was noted. Data were stored in RedCap with access restricted to IRB protocol members. Statistical analysis was performed using Microsoft Excel with Chi-square, Welch's T-test, and ANOVA.

Results: Hiatal hernia size and repair method varied significantly between the two groups. The majority of sleeve gastrectomy (SG) patients had small hernias repaired with anterior crural repair (215/322, 296/322), while Roux-en-Y gastric bypass (RNYGB) patients had larger hernias, with a higher proportion undergoing posterior or combined anterior and posterior crural repair ($p=0.0065$ for size, $p=0.0007$ for repair method). The overall GERD recurrence rate was 29.5% for SG and 38.5% for RNYGB ($p=0.3384$), and the recurrence rate for hiatal hernias was 12.7% for SG and 11.5% for RNYGB ($p=0.8601$). Symptomatic hiatal hernia recurrence was 8.1% for SG and 11.5% for RNYGB ($p=0.5387$). Time to recurrence was significantly shorter for RNYGB: 19.7 months for hiatal hernia recurrence ($p=0.0063$) and 19.7 months for symptomatic recurrence ($p=0.0102$), compared to 28.1 months and 35.4 months for SG. Notably, the majority of symptomatic recurrences occurred in patients with anterior repairs (25/26 for SG, 3/3 for RNYGB). Hernia size did not correlate with recurrence, as small and moderate hernias recurred in both groups, but no large hernias recurred. Treatment for recurrent symptomatic hiatal hernias was similar between groups, with most patients managed medically; none in the RNYGB group required surgery. After excluding patients with small hernias repaired anteriorly, recurrence rates were similar between SG and RNYGB, with 32.7% vs. 37.5% for GERD and 17.7% vs. 12.5% for hiatal hernia, respectively. Time to recurrent symptoms and hiatal hernia was generally shorter for RNYGB, though not statistically significant. Overall, RNYGB patients had earlier recurrences, but treatment approaches were similar between groups, with most managed medically.

Conclusion: In summary, hiatal hernia repair during bariatric surgery is a safe and effective method for preventing or alleviating gastroesophageal reflux symptoms. The type of repair does not appear to affect the rate of symptomatic recurrence, although recurrence tends to occur earlier in patients undergoing Roux-en-Y gastric bypass compared to sleeve gastrectomy. We recommend circumferential dissection and crural repair, particularly for larger hernias. Further studies are needed to identify risk factors for recurrence, which could inform surgical decision-making.

ePoster #3 | Clinical Science | Bariatric/Foregut

"An Investigation of Surgical Feeding Access in Patients with Remote Bariatric Surgery"

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Background: Alteration of gastrointestinal anatomy post-bariatric surgery can complicate subsequent patient management. Particularly, placement of enteral feeding access like gastrostomy (G-tube) or jejunostomy (J-tube) tubes, for which no current guidelines exist. This study investigates trends in feeding tube placement in post-bariatric surgery patients.

Methods: A retrospective multi-center chart review was conducted on adult patients with a sleeve gastrectomy or Roux-en-Y gastric bypass (RYGB) requiring feeding access post-bariatric surgery from January 1, 2019 – January 1, 2024. Data recorded included patient demographics and anthropometrics, bariatric surgery history, location of, approach of, and service providing feeding tube placement, and associated complications including presence of aspiration pneumonia.

Results: Included were 32 feeding tube placements in 29 patients, predominately female (n=27/29, 93.1%), with an average age of 51.1 +/- 11.3yrs and BMI of 35.1+/- 13.6. G-tube placement (n=19/32, 59.4%) was most common followed by J-tube (n=11/32, 34.4%) and GJ-tube (n=2/32, 6.3%). Feeding tubes were mostly placed in patients with a RYGB (n=24/32, 75.0%) and by general surgeons. The 2 GJ-tubes were placed by interventional radiology, one in a patient with a RYGB and the other with a sleeve gastrectomy. Complications were found in 68.8% of cases, the most common being leaking/clogging occurring in 46.8% of cases and more frequently in patients with a G-tube. 34.4% of feeding tubes became displaced or required replacement. 2 patients with a sleeve gastrectomy receiving J-tubes developed aspiration pneumonia.

Conclusion: This study describes feeding tube placement in patients with remote bariatric surgery, which is a challenging and understudied issue. Larger studies are needed to develop guidelines.

Table 1:
Characteristics of Patients and Feeding Tube Placements

Female Gender, n (%)	27 (93.1)
Age, avg (sd)	51.1 (11.3)
BMI, avg (sd)	35.1 (13.6)
G- tubes placed, n (%)	19 (59.4)
J-tubes placed, n (%)	11 (34.4)
GJ-tubes placed, n (%)	2 (6.3)
Patients with a history of RYGB receiving a G or J tube, n (%)	24 (75)
Feeding Tube Complication Rate, n (%)	22 (68.8)
Leaking/Clogging Feeding Tubes, n (%)	15 (46.8)
Dislodged/Displaced Feeding Tubes, n (%)	11 (34.4)

ePoster #4 | Clinical Science | Bariatric/Foregut

Impact of Food Deserts on Post-Operative Outcomes of Bariatric Surgery

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Background: Bariatric surgery is a well-established treatment for obesity, leading to significant weight loss and improvement in comorbidities. Despite this, some patients regain weight after surgery; the role of food access and income in post-surgical weight management and overall health remains underexplored.

Methods: A retrospective review of patients undergoing bariatric surgery at a single institution from 2014-2020 was performed. Weight and comorbidity data obtained at 1, 3, and 5 years after surgery using a prospectively maintained database. Pre-operative weight was subtracted from weight at 1, 3, and 5 years after surgery. Low food access and income data were derived from the USDA Food Access Research Atlas.

Results: In our preliminary analysis involving 164 patients, 81 patients were identified as living in low-access areas, and 54 were identified as living in low-access and low-income areas. There was a statistically significant ($p = <0.001$) difference between post-operative weight in patients from low-income and low-access at 1, 3, and 5 years after surgery.

Conclusion: Our data suggest that residing in a food desert at the time of surgery affects the changes in post-surgical weight following bariatric surgery. Addressing access to food is essential for improving long-term outcomes for bariatric surgery patients, particularly those from lower-income backgrounds.

ePoster #6 | Clinical Science | Colon and Rectal Surgery

Educational Video for Colonoscopy: Impact on Patient Anxiety, Understanding and Satisfaction

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Background: Many patients report anxiety surrounding screening colonoscopy, which can be a deterrent to colon cancer screening. While informed consent is vital, there can be wide variability in how it is delivered. We hypothesized that use of a pre-procedure, educational video would reduce anxiety, increase understanding, and improve patient satisfaction following colonoscopy.

Methods: Starting in September 2024, patients scheduled for elective colonoscopy received a link to the educational video developed by our division. They were prompted to view the video in advance of their procedure. On the day of their procedure patients were asked whether they watched the video. All patients had verbal informed consent with the endoscopist. The following day, patients received an email with modified State-Trait Anxiety Inventory (STAI), the Quality of Informed Consent survey, and the Picker Patient Experience Questionnaire (PPE-15). Responses were collected in Redcap and analyzed by group: video + standard consent versus standard consent alone.

Results: Among 60 patients enrolled in the study, 30 completed the questionnaire (50%). Patients were divided in two groups: video + standard consent (16; 53%) vs. standard consent alone (14; 47%). Most patients had undergone a prior colonoscopy (23; 77%). No patients had a significant complication (readmission, bleeding, perforation). The standard consent alone group had slightly greater baseline anxiety compared to the video + consent group (7.93 vs. 6.5), although the difference was not significant. Procedure day anxiety was similar between groups. Among patients having their first colonoscopy, baseline anxiety levels were similar (6.25 vs. 6.00). Both video and standard consent only groups had low mean PPE-15 scores reflecting high satisfaction (1.69 and 2.21, respectively). More patients in the video group reported no anxiety/fear following the procedure (10; 62.5%) compared to patients in the consent only group (7; 53.8%). This was also true for the first colonoscopy groups. 100% of patients in both groups reported confidence in their informed consent process: understanding the steps, indications, and risks of the procedure. Only one patient in each group reported feeling unsure about the major risks.

Conclusion: Overall patient anxiety, procedure understanding, and satisfaction were satisfactory in both the standard and video + standard consent groups. Use of the video was associated with decreased anxiety in some domains and may be especially useful for patients undergoing their first colonoscopy.

	Video + Consent	Consent Only	P-value	First Colonoscopy Video + Consent	First Colonoscopy Consent Only	P-value
N	16	14		4	3	
Age, mean (SD)	64.9 (11.4)	60.2 (10.5)		54.0 (4.88)	48.1 (3.47)	
Female, n (%)	7 (43.8)	8 (57.1)		1 (25.0)	1 (33.3)	
Previous Colonoscopy, n (%)	12 (75.0)	11 (78.6)		--	--	
PPE-15 Score, mean (SD)	1.69 (2.02)	2.21 (1.93)	0.471	0.25 (0.5)	2.00 (1.73)	0.218
STAI Score - Baseline, mean (SD)	6.50 (1.97)	7.93 (2.84)	0.128	6.25 (2.5)	6.00 (0.00)	0.854
STAI Score – Procedure Day, mean (SD)	6.94 (3.36)	6.64 (2.56)	0.788	5.00 (0.00)	7.00 (3.46)	0.422
Cumulative PPE-15 Score [Possible Range]	27 [0-240]	31 [0-210]		1 [0-60]	6 [0-45]	
Cumulative STAI Score - Baseline [Possible Range]	104 [80-320]	108 [70-280]		25 [20-80]	18 [15-60]	
Cumulative STAI Score – Procedure Day [Possible Range]	110 [80-320]	93 [70-280]		20 [20-80]	21 [15-60]	

PPE-15: Picker Patient Experience 15 Questionnaire; STAI: State-Trait Anxiety Inventory

ePoster #7 | Clinical Science | Colon and Rectal Surgery

Socioeconomic and Clinicopathologic Disparities in Early Onset Colon Adenocarcinoma

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Background: Annual incidence rates of early-onset colon adenocarcinoma (EOCA) have increased over the last decade. Early-onset colon cancer patients are presenting with more advanced disease, higher incidence of left-sided tumors and higher proportion of rectal cancers. The objective of our population-based analysis included identifying the socioeconomic and demographic disparities associated early-onset colon adenocarcinoma (EOCA).

Methods: After obtaining IRB approval, we queried the SEER database for patients 18 years of age or older diagnosed with colon adenocarcinoma from 2010-2019. Clinicopathologic data was correlated to factors associated with age at diagnosis. The population was stratified into 2 cohorts, early-onset group (EOCA) comprising of patients aged 45 years of age or younger and late-onset group consisting of patients older than 45 years of age. Clinicopathologic and socioeconomic factors were analyzed. Overall survival (OS) using Kaplan Meier analysis and log-rank test were performed.

Results: Overall, 8127 patients (5.21%) were diagnosed with EOCA in the SEER database. Among that population, patients were diagnosed with comparatively more advanced disease stage (stage IV, N=2435, 30%, $p<0.01$). Significantly higher rates of Hispanic, Asian and African American patients were noted compared to Non-Hispanic White patients (47.3% vs 33.6%, $p<0.01$) in EOCA cohort. Incidence of Early-Onset Colon Adenocarcinoma (EOCA) has increased over the last decade. Majority of patients receiving surgical intervention were from metropolitan urban counties (95.5%, $p<0.01$) compared to rural counties. No significant gender disparities noted in patients in EOCA cohort ($p=0.207$). Lower Median Family Income (<$35,000) was associated with worse overall survival (73 months, log-rank $p<0.001$) compared to higher median family income (>$75,000) with survival of 89 months. Primary disease site located in the sigmoid and descending colon (61.4%, $p<0.01$) was associated with EOCA. Positive CEA was a strong indicator of decreased overall survival, OS of 60 months (log-rank $p<0.001$).

Conclusion: Significant socioeconomic and demographic disparities exist regarding EOCA. Our population-based analysis identified that minority races and lower income families are more likely to present with EOCA. Identifying demographic and socioeconomic disparities can lead to more targeted screening programs that can lead to improve access to multidisciplinary care and improved treatment outcomes.

ePoster #8 | Education | Education

Impact of Resident Physician Presence on Perioperative and Operative Care

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Background: This study examines the impact of introducing resident physicians to a health system, previously without any trainees, on various aspects of perioperative and operative care. Looking beyond classic parameters seen in the literature, such as operative times, this preliminary, single-institution research investigates length of stay, 30-day readmit rates, case complication rates, and mortality rates.

Methods: A retrospective analysis of inpatient procedures conducted by two physicians, now heavily involved in resident education, was examined over 15-month periods before and after the residents' introduction in July 2022. Patient data from the electronic health record (EHR) were collected and analyzed for differences in outcomes.

Results: In comparing the patient cohorts before and after the inclusion of residents, we found no statistically significant differences in the observed metrics. Respectively, pre- and post-resident values for length of stay were 9.6 versus 9.9 days; complication rates were 6.18% versus 8.31%; 30-day readmit rates 9.73% versus 9.62%; and mortality rates were 3.66% versus 2.71%.

Conclusion: Thus, our findings suggest that the presence of resident physicians in a previously non-teaching institution likely has not had a negative impact on overall patient care inside or outside of the operating room. Future research directions include investigating specific complications, operative costs, and patient perception through prospective surveys.

ePoster #9 | Education | Endocrine

Ectopic thyroid tissue arising from the carotid sheath: A unique case with mediastinal extension requiring sternotomy

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Introduction/Objective: Ectopic thyroid tissue (ETT) typically presents in the midline along the thyroglossal duct or at the base of the tongue. ETT lateral to the midline is rare, and diagnosis is made with imaging and tissue biopsy. We present a case where a presumed left-sided retrosternal goiter was found intraoperatively to be a separate, ETT mass arising from within the carotid sheath with extension into the anterior mediastinum. Excision of this mass required sternotomy.

Case Presentation: A 73-year-old female with chronic cough was noted to have mediastinal widening and tracheal deviation on CXR. Follow up CT revealed a large, 10.3 cm mass associated with the left inferior thyroid lobe with extension into the mediastinum. FNA revealed FLUS cytology. She underwent left thyroid lobectomy and intra-operatively the retrosternal component was found to be separate from her left thyroid lobe. The left carotid sheath was explored and contained the ETT. Given its size and location, a mini median sternotomy was required for successful excision. The vagus and recurrent laryngeal nerves were monitored and successfully protected. She did well and was discharged on post operative day 2.

Discussion: Final pathology demonstrated benign multinodular hyperplasia consistent with ETT. This case highlights the importance of keeping ETT in the differential diagnosis, as well as the importance of appropriate pre-operative planning and multidisciplinary teams.

Conclusion: This is the first ETT arising from the carotid sheath reported in the literature that required a sternotomy.

ePoster #10 | Clinical Science | General Surgery

D50 Injection for Gastrostomy Tube Leakage: A Preclinical Proof of Concept

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Background: Gastrostomy tubes (G-tubes) play an important role in nutrition for those unable to ingest food for a variety of reasons. A common complication that occurs with G-tubes is leakage. D50 injections around the gastrostomy tract are proposed to stiffen and decrease the diameter of the tract sufficient to decrease leakage onto the external skin.

Methods: To standardize D50 injections, a 3D-printed resin injection guide was created to distribute a reproducible injection pattern. The injection guide has a central stem with six evenly distributed, angled injection holes. The stem is adjustable in length and width, providing accommodation to patient habitus and commonly used G-tube sizes. A static model of gastrostomy tube leakage was created using porcine abdominal wall and a volleyball (as the stomach reservoir). Gastrostomy tube leakage was measured by weighing the leakage on a piece of gauze. Leakage was then measured after injection of D50.

Results: Preliminary testing of the device involves injection of D50 into a porcine skin abdominal wall model containing a gastrostomy tract and measuring the decrease in levels of leakage. An injectable tracer such as barium sulfate is also included to obtain radiologic scans of the bulking effect in the skin.

Conclusion: Gastrostomy tube leakage is controlled by the injection of D50 around the tract in our model. Injection radiographs demonstrate the effect of the D50. IRB approval for a clinical trial has been approved and will hopefully confirm preclinical data.

ePoster #11 | Clinical Science | General Surgery

Right Sided Giant Pheochromocytoma: A Case Study on Perioperative Management

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Introduction/Objective: Pheochromocytomas (PCCs) are rare neuroendocrine tumors that secrete catecholamines, leading to symptoms like hypertension, palpitations, and diaphoresis. Giant PCCs, defined as tumors larger than 7 cm, are even rarer and present unique challenges in perioperative management. This case study aims to explore the management and surgical outcomes of a giant PCC, with a focus on the role of preoperative blockade and the feasibility of reducing perioperative interventions.

Case Presentation: A 47-year-old woman with a history of morbid obesity, heart failure, and uncontrolled hypertension was transferred for evaluation of a right-sided giant PCC. The tumor, measuring 9.1 x 7 x 9.7 cm, was associated with paroxysmal hypertension, a hypertensive emergency, and a Type II NSTEMI. Despite an intensive preoperative blockade regimen, including alpha and beta blockers, she remained hypertensive without a change in blood pressures until an esmolol drip was started. Surgery was performed the next day without significant hemodynamic instability. Histopathology confirmed a pheochromocytoma with extensive necrosis and fibrosis.

Discussion: Current guidelines recommend preoperative alpha and beta blockade to prevent hypertensive crises during surgery. However, newer evidence suggests that pre-operative blockade may be less critical for giant or asymptomatic tumors. Reducing or omitting preoperative blockade could lower costs, shorten hospital stays, and reduce medication-related morbidity without increasing mortality.

Conclusion: This case highlights the feasibility of safely managing giant PCC's with minimal preoperative blockade, challenging traditional protocols. Further research is needed to refine perioperative strategies, particularly for giant tumors, to improve patient outcomes and reduce healthcare costs.

ePoster #12 | Clinical Science | Hepatobiliary and Pancreas

Evaluating the Association between Biliary Hyperkinesia and Chronic Cholecystitis: Paving the Way for Robust Cholecystectomy Indications

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Background: Biliary hyperkinesia (BH) occurs when the gallbladder contracts more often than normal in the absence of ultrasound visible biliary stones. Biliary dyskinesia on the other hand occurs with a decreased ejection fraction typically defined as less than 35%. Biliary dyskinesia has long been established as a primary indicator for cholecystectomy. Data regarding the use of cholecystectomy in patients with biliary hyperkinesia is still lacking. Some studies have reported symptomatic improvement in biliary hyperkinesia patients post-cholecystectomy (Williford 2021). One possible cause of BH may be cholecystitis. Other causes might include increased production of cholecystokinin (CCK) or an increase in CCK receptors leading to increased gallbladder contractility and pain (Black 2023). However, the principle etiology of biliary hyperkinesia remains poorly understood in surgical literature

Pathophysiology of a symptomatic hyperkinetic gallbladder is still being determined and how it affects the role of cholecystectomies in the treatment plan is still controversial. Patients with BH may present a dilemma for physicians when attempting to establish a source for a patient's symptoms. This also prompts further questioning of whether there are other patient/environmental/technique factors that can influence the occurrence and progression of BH. This study aims to establish a possible link between patients with BH and post-operative pathology reports of cholecystitis in hopes of influencing future diagnosis and treatment outcomes.

Methods: A retrospective review was conducted of all cholecystectomies performed at Ochsner LSU Health Shreveport between August 2018 and June 2024. The study was approved by the IRB and all information was obtained from the hospital's electronic medical record. All cholecystectomies were performed for various pathologies including, but not limited to, choledocholithiasis, biliary dyskinesia, as well as biliary hyperkinesia. For the purposes of this study we wanted to isolate those patients who were determined to have biliary hyperkinesia as defined by a calculated ejection fraction (EF) ≥ 80% on hepatobiliary iminodiacetic acid scan (HIDA). Exclusion criteria included patients with biliary hypokinesia defined as ejection fraction <30%, cholecystitis, cholelithiasis, incarcerated patients, and patients under the age of 18. Those who met selection criteria for biliary hyperkinesia were then evaluated using various labs, imaging, pathology reports, as well as demographic data including: age, sex, race, BMI, EtOH status, and smoking status.

Results: Of the 642 cholecystectomies performed over this period only 59 of the patients met our criteria for BH (9.2%). Of the BH patients, 48 (81.4%) of them had pathology reports consistent with acute or chronic cholecystitis. A 1-sample proportions test with continuity correction determined that it was significantly more common ($p < 0.05$) for BH patients to be positive for cholecystitis instead of negative. Although it was determined that there is a statistically significant correlation between biliary hyperkinesia and cholecystitis,

our data did not find any significant between cholecystitis and other factors (including: age, race, sex, obesity, ethanol status, tobacco status, aspartate transferase, alanine transaminase, alkaline phosphatase, or WBC)

The average age of those positive for cholecystitis was 40 (± 12.8 SD) years old and the average age of those negative for cholecystitis was 38.6 (± 14.1 SD) (p=0.77). 47 of the BH patients were female and 12 were male. Only 36 of the female BH patients were found to have cholecystitis while all 12 males were found to have cholecystitis. Race was divided into four categories, African American, Caucasian, Asian, and Hispanic. 21/59 BH patients were African American, 1/59 were Asian, 3/59 were hispanic, and 34/59 were caucasian. All persons in the Asian and hispanic groups were positive for cholecystitis on pathology report while only 19/21 African Americans and 25/34 caucasians were determined to be positive.

Of the 59 BH patients, the average weight, in kilograms, of those positive for cholecystitis was determined to be 83.2 (± 23.4 SD) and those negative for cholecystitis was 86.2 (± 40.4 SD) (p=0.82). The average BMI (kg/m2) was 30.8 (± 8.75 SD) in those BH patients positive for cholecystitis and those negative for it had an average BMI of 31.8 (± 14.3 SD) (p=0.83). 14 of the BH patients reported ethanol (EtOH) use while 45 did not. 12/14 BH patients who reported EtOH use and 36/45 BH patients who reported no EtOH use were positive for cholecystitis on pathology report (p=1). This p-value was established using Fisher's exact test. 20/59 of the BH patients reported active tobacco use. 15/20 of the BH patients who reported tobacco use as well as 33/39 of those who did not report tobacco use were all positive for cholecystitis on pathology report (p=0.586). This p-value was established using Pearson's chi squared test with Yates' continuity correction.

The average aspartate transferase (AST) serum levels of the BH patients was 26.3 (± 28.5 SD) in those positive for cholecystitis and 45.6 (± 86.2 SD) (p=0.48) in those negative for cholecystitis. The average alanine transaminase (ALT) serum levels of the BH patients was 33.2 (± 27.2 SD) in those positive for cholecystitis and 49.7 (± 64 SD) (p=0.42) in those who were negative. The average alkaline phosphatase (ALP) in BH patients with cholecystitis was 74.8 (± 28.4 SD) and 79.2 (± 23.1 SD) (p=0.6) in those without. The average white blood cell count (WBC) in BH patients positive for cholecystitis was 7.98 (± 2.53 SD) and 7.81 (± 1.88 SD) (p=0.81) in those negative. The EF of all 59 patients with BH was determined using HIDA scan. The average EF of those positive for cholecystitis was 93.4 (± 4.95 SD) and 90.4 (± 6.96 SD) (p=0.2) in those who had negative pathology reports.

Conclusion: There is a significantly greater probability that those diagnosed with biliary hyperkinesia as determined by HIDA scan will have a cholecystitis diagnosis upon pathology report. This was determined using a 1-sample proportions test with continuity correction.

ePoster #13 | Clinical Science | Plastic & Maxillofacial Surgery

3 Year Retrospective Case Series with Reconstruction of Necrotizing Fasciitis Utilizing Preserved Hypochlorous Acid (pHA) Preserved Wound Solution

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Background: Necrotizing fasciitis (NF), an accelerated subgroup of necrotizing soft-tissue infections, resulting in necrosis of the fascia, muscle, and subcutaneous tissue. When infection of this nature affects the genitals and perineum, it is called Fournier's gangrene. NF results in high rates of sepsis and mortality. However, early diagnosis, aggressive surgical resection, and adequate antimicrobial therapy have been shown to reduce mortality. We demonstrate a comprehensive treatment plan utilizing preserved hypochlorous acid (pHA) solution in cases of NF followed by varied reconstructive surgical techniques.

Methods: Data was retrospectively reviewed of patients with NF, including Fournier's gangrene, who underwent surgical excision and reconstructive procedures at an academic hospital between 2021-2024. 7 patients were recognized. Along with patients' operative techniques, their demographics, comorbidities and cultures were reviewed. Outcomes were assessed in the outpatient wound center.

Results: All 7 patients received dilute pHA irrigation intraoperatively to decrease biofilm burden and optimize the wound bed prior to reconstruction. The most common reconstructive techniques were local advancement flaps, complex closures, and skin grafts. 2 patients underwent reoperation for wound dehiscence. 2 patients healed from their excision and reconstruction without reoperation. 2 patients experienced minor wound dehiscence treated with local wound care. 1 patient was lost to follow-up but was discharged without known complications.

Conclusion: NF excision, irrigation with pHA solution, and perioperative care were standard for all patients but reconstructive procedure remained variable. High surgical success rates were seen with this integrated protocol. Wound bed preparation with pHA is an effective technique for improving outcomes after surgical excision and reconstruction.

Case	Age, Sex	NSTI at Presentation	Additional Findings	Reconstruction	Cultures	Outcome
1	57 F	Abdominal wall, L groin, perineum, L buttock	Osteomyelitis of pubis, hematoma	Debridement, ORAM flap, skin graft, NPWT, diverting colostomy	pseudomonas aeruginosa, serratia marcescens, Proteus vulgaris	5% loss of proximal ORAM flap, debrided, treated successfully with local wound care
2	43 M	Abdominal wall, L buttock, L groin, perineum, pubis, penis, scrotum	----	Debridement, rotational flap, LTA subcutaneous scrotal flap, open ended colostomy	beta streptococci, prevotella corporis, mobiluncus mulieris	Healed well inpatient, transferred out of state
3	53 M	Pubic, perineum, scrotum	----	Debridement, advancement flap	No growth	100% healed 9 weeks postop
4	69 M	Pubis, groin, scrotum, penis	urethral necrosis	I&D, Right rectus femoris muscle flap, LTA, STSG, NPWT	Proteus vulgaris	Minor surgical dehiscence treated with local wound care, 100% healed 1 year postop
5	65 M	Bilateral scrotum and perineum	----	Thigh pockets, LTA, wick assisted closure, NPWT	No culture data	Healing well inpatient, transferred to another hospital system
6	56 M	L buttock/thigh	Sacral/trochanteric pressure injury, osteomyelitis of ischium	Rotational flap, CLWC	klebsiella pneumoniae, pseudomonas A., enterococcus F.	Partial dehiscence of sacral reconstruction, no recurrence of infection
7	58 F	Lower abdominal wall, L groin, pubis, thigh	----	Rotational flap, CLWC	Klebsiella pneumoniae, citrobacter amalonaticus, enterococcus F.	5cm x7cm area of dehiscence treated with operative debridement

ePoster #14 | Clinical Science | Plastic & Maxillofacial Surgery

Autologous Fat Grafting to the Pre-Levator Muscle Aponeurosis in Patients with Age-Related Enophthalmos

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Background: Fat atrophy-related enophthalmos patients present with increased upper eyelid length which may lead to ptosis and compensatory frontalis recruitment to compensate for visual deficits. Blepharoplasty or forehead lift may prove insufficient for this "sunken eye" cohort. Autologous fat grafting (AFG) directly addresses atrophy-related changes and can eliminate the sunken eye appearance.

Methods: Patients treated with superior sulcus AFG were identified between December 2012 - February 2024. Patients receiving concomitant upper facelift or eyelid procedures were excluded. Measurements collected pre-operatively and at first follow-up included upper lid to orbital rim height (superior sulcus), palpebral fissure height, and upper/lower margin-reflex distance (MRD). Analysis included descriptive and inferential statistics with significance set at $p < 0.05$.

Results: During the study period, 6 patients received only AFG (FAT), while 18 underwent concomitant lower face/neck lift (LIFT). There was no difference between the average age, follow-up time, or fat injection amount between groups. Significant increases in FAT upper MRD were noted in both eyes (average Right eye (OD): 1.35mm, $p=0.016$, average Left eye (OS): 1.45mm, $p=0.022$). Similarly, LIFT patients saw a significant increase in bilateral upper MRD (OD: .90mm, $p=0.004$, OS: .96mm, $p=0.002$). LIFT patients saw significant reductions in superior sulcus height bilaterally (OD: 4.07mm, $p<0.001$, OS: 4.05mm, $p<0.001$). Neither group had significant changes in lower MRD or palpebral fissure height bilaterally.

Conclusion: AFG to the pre-levator muscle aponeurosis successfully restored volume in patients with periorbital fat atrophy-related enophthalmos, helping to reduce ptosis-related symptoms (Figure 1). Quantification of secondary improvements in frontalis wrinkling and effect longevity warrants further investigation.

Figure 1. Patient before (above) and after (below) receiving fat grafting to superior sulcus.

ePoster #15 | Clinical Science | Thoracic Surgery

Case Report: Development of Small Cell Lung Cancer Following Gunshot Wound to Chest

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Introduction/Objective: Small cell lung cancer (SCLC) is an aggressive malignancy that comprises about 15% of diagnosed lung cancer cases in the United States. This type of lung cancer is notorious for its rapid growth and early metastasis, resulting in advanced staging for over two-thirds of newly-presenting patients. Furthermore, nearly all patients report history of or current tobacco smoking. Additionally, a well-documented relationship exists between sites of trauma, including gunshot wounds, and subsequent cancer development, possibly as a result of inflammation, scarring, or even medical treatment. However, a direct causal relationship has not been proven definitively, and the development of SCLC in particular has not been well studied. We report a case of a patient who presented with biopsy-proven SCLC of the left lung, 45 years following a gunshot wound to the left chest. While the patient did have a history of tobacco use (one to two packs per day for 25 years), he quit smoking 30 years prior to diagnosis. Because SCLC often presents with advanced disease, it is frequently treated with chemoradiation therapy rather than surgery. However, in this case, the tumor was a solitary mass clinically confined to the left upper lobe. Therefore, surgical resection was offered and successfully performed by an academic surgeon at a private practice, followed by postoperative adjuvant chemoradiation therapy. At a 36-month follow-up, the patient has continued to do well without evidence of recurrence. We will discuss the potential relationship between tumor development and the foreign body of the metallic object, fragments of which remained in situ following his injury and at the time of his cancer diagnosis. We will also briefly consider the implications of a clinically apparent early stage SCLC without metastasis.

Case Presentations: A 70-year-old white male, a retired police officer, presented in office with a severe cough and shortness of breath following an oncology referral. He had no previous medical history of cancer. Forty-five years prior to his cancer diagnosis, he suffered a single .38 caliber gunshot wound to the left chest in the line of duty. Interestingly, during the Miami riots in the 1980s, he was assaulted by a mob and shot with his service revolver. Management at that time, beyond resuscitation and stabilization, involved left thoracostomy tube placement. The metal projectile was left in situ. He was discharged home one month later. Initial workup of his pulmonary symptoms included a CXR and a CT scan of the chest which revealed a 7.6 x 7.5 cm mass in his left lung and metallic fragments in the left axilla and posterior mediastinum. A CT-guided biopsy confirmed small cell carcinoma which was positive for CD56 and synaptophysin (both markers of small cell carcinoma) and negative for CD45. A PET scan revealed no evidence of any distant metastases, including common small cell carcinoma metastasis sites such as the brain, liver, adrenals, bone, and mediastinum. An MRI of the brain was within normal limits. While the patient reports a previous history of tobacco use, he had quit smoking at age 40, three decades prior. Thus, the diagnosis of small cell carcinoma became considerably rarer, since the risk of tobacco-related cancers drops 39.1% five years after quitting smoking and thereafter continues to fall.7 After a thorough negative metastatic workup and extensive discussion regarding treatment options, the patient and his physicians opted for surgical

resection. Numerous factors were taken into consideration: the tumor was a solitary mass; the patient had an excellent performance status with good 3 pulmonary function; and he showed rapidly worsening symptoms of pain and numbness in the back and left arm caused by tumor compression. The patient subsequently underwent a left thoracotomy with formal upper lobectomy and mediastinal lymphadenectomy performed by a cardiothoracic surgeon. Third and fourth ribs were removed en-bloc with the tumor achieving negative margins. The chest wall was reconstructed with a 2-mm Gore-Tex patch to prevent scapular entrapment. Pathology showed grade 3 poorly differentiated small cell carcinoma with clear surgical margins and ten benign lymph nodes (pT4, pN0, M0). Interestingly, metal fragments from the lead bullet were identified within the mass. At the four week and six week follow-ups, the patient was recovering well. The first of three cycles of chemotherapy of carboplatin and etoposide began four weeks after the surgery. The patient had already completed preoperative prophylactic cranial irradiation.

Discussion: This case illustrates a possible relationship between the development of SCLC and the long-term presence of a foreign body, such as bullet fragments. Cancer growth following trauma, including gunshot wounds, has been previously documented. Scientific literature has also explored the negative impact of gunshot fumes on lung cells. However, cases of SCLC arising after tissue trauma have proven much rarer to find, especially because this type of cancer is typically associated with smoking. As previous reports have discussed, scarring or infection produced by trauma may induce cancer. In this case, we also note that fragments of the bullet remained in the patient long after the initial gunshot injury. This fact leads us to question whether the presence of foreign bodies themselves, such as metallic objects, may give rise to tumorigenesis. Finally, this case is unusual in that the tumor presented as a unifocal, albeit large, mass with no clinical or radiographic signs of metastasis, making surgery a viable treatment option. The patient's excellent performance status warranted an aggressive surgical approach. We wonder whether the biology and disease course of SCLC associated with foreign bodies are different from tobacco-related SCLC. Similar documented instances include breast cancer arising from blunt trauma, squamous cell carcinoma arising from a gunshot wound, and a literature review indicating that chronic mucosal trauma could be a risk factor for developing oral cancer. However, we were unable to find studies that compared molecular and biomarkers for trauma-induced compared to smoking-induced tumors. In light of these cases, consideration for chest CT screening in patients with prior history of foreign body trauma may prove beneficial in early identification of cancer.

Conclusion: The above case suggests a relationship between small cell carcinoma and trauma associated with foreign bodies, such as metallic bullets. While previous literature has discussed the link between tissue trauma and cancer, this paper specifically explores small cell carcinoma, which has not been previously well-documented. We also discuss the intriguing possibility of a relationship between foreign body trauma and lack of tumor metastasis; this correlation is all the more notable because the cancer in this case was small cell lung carcinoma, a type of malignancy especially notable for aggressively spreading throughout the body. Further studies would be helpful in delineating the relationship between trauma and small cell lung carcinoma.

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ePoster #16 | Clinical Science | Trauma/Burn/Critical Care

Incidental Mesothelial Inclusion Cyst Found During Trauma

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Introduction/Objective: Mesothelial inclusion cysts are rare, benign lesions arising from mesothelial cells lining serosal surfaces, such as the peritoneum. They are more commonly reported in females and are associated with prior abdominal surgeries or pelvic inflammation. Although typically small, larger cysts can cause mass effect or raise concerns for malignancy. This case highlights a rare mesothelial cyst incidentally discovered during trauma surgery, emphasizing the importance of expanding knowledge on its diagnosis and management.

Case Presentation: A 53-year-old male presented with abdominal stab wounds and bowel evisceration. During exploratory laparotomy, a large serous cystic mass (19.5 x 13.0 x 5.8 cm, 926 g) was identified in the right paracolic gutter and resected using blunt and electrocautery dissection. Initial differential diagnoses included duplication cyst and appendiceal mucinous neoplasm. Histopathology confirmed the lesion as a mesothelial-lined cyst with a smooth, glistening pink-tan surface and no papillary or nodular features. The patient recovered over 26 days postoperatively despite complications.

Discussion: Mesothelial cysts are typically asymptomatic and histologically benign, with eosinophilic mesothelium and minimal inflammation. While their pathogenesis is unclear, inflammatory reactivity is a proposed mechanism. Diagnostic imaging often shows benign-appearing multiloculated cysts conforming to the peritoneum. Surgical excision is recommended for large cysts due to potential mass effect, though resection for small, asymptomatic lesions remains debated.

Conclusion: The incidence of mesothelial inclusion cysts is unknown due to their rarity and frequent incidental discovery, often during imaging or surgery for unrelated conditions. This case highlights the need for continued case reporting to refine diagnostic criteria and develop evidence-based management guidelines.

ePoster #17 | Clinical Science | Trauma/Burn/Critical Care

MRSA Nasal Swabs Predict Need for Antibiotic Coverage in a Trauma Population

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Background: Methicillin-resistant Staphylococcus Aureus (MRSA) Nasal Swab screening in a general intensive care unit (ICU) population has been shown to have a high negative predictive value and is used to guide antibiotic stewardship. Trauma populations may be more susceptible to hospital-acquired pneumonia. The purpose of this study is to assess the utility of the MRSA nasal swab in predicting MRSA pneumonia in a trauma population.

Methods: A retrospective review of trauma ICU patients who received an MRSA nasal swab from 2020-2023 was performed. Positive and negative MRSA nasal swab groups were compared and sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were calculated. MRSA pneumonia was defined as the presence of ≥105 MRSA colonies on respiratory culture.

Results: A total of 163 patients were screened and 22 (13.5%) patients had positive MRSA nasal swabs. There were no significant differences in age, BMI, smoking, or COPD between the swab positive and swab negative groups. Sensitivity and specificity were 66.7% and 91.8% respectively with a PPV 45.4% and NPV of 96.4%. 5 patients (3.1%) developed MRSA pneumonia and all but one of these had a positive MRSA nasal swab. AUC for the MRSA nasal test was calculated to be 0.793.

Conclusion: This is the largest study to date to examine the utility of the MRSA nasal swab in the trauma population. The high NPV (96.4%) for the prediction of MRSA culture growth and VAP suggests that MRSA nasal swabs may be a useful tool for antibiotics stewardship in the trauma population.

ePoster #18 | Clinical Science | Trauma/Burn/Critical Care

Using Nitinol Continuous Compression Clips for Chest Wall Injuries: Case Series and Description of a Novel Tool for Fixation

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Background: The cornerstones of fracture fixation are stabilization and fracture compression. This is usually achieved using hardware that spans the fracture and spreads the tension across a broad surface and compression is achieved manually by the surgeons. Nitinol, equal parts nickel and titanium has been used with other fracture patterns for its unique property of structural memory. Furthermore, a clip style design can provide stabilization across a fracture without requiring broad surface fixation which can be essential for certain fracture patterns where surface space is limited. Here we describe a case series of patients with unstable chest wall fractures stabilized using Nitinol continuous compression clips (CCC).

Methods: We provide a case series over October 17, 2017 to November 1, 2024 of four patients who presented to our level one trauma center with different atypical fracture patterns where CCC were determined to be ideal. We then conducted a retrospective chart review.

Results: Patient one had severe unstable anterolateral ribs with an unstable sternal body fracture. Although the sternal fracture was not displaced, the addition of anterolateral rib fractures produced a highly unstable chest wall with painful asynchrony with respiration. In addition to anterolateral rib fixation with plates and screws, CCC were used across the sternal fracture to provide effective stabilization of the entire chest wall.
Patient two had an unstable sternal fracture among other significant long bone fractures. Initially, this was fixed with a plating system consisting of longitudinal screw and plates. During recovery, the patient was found to have a previously unnoticed series of fractures where the cartilaginous portions of lower ribs attach to the lower sternum. CCC were used to stabilize this fracture effectively.
Patient three initially had an unstable sternal fracture fixed with a plating system consisting of plates and screws which failed due to screw pull-out and resulted in severe displacement of the sterno-manubrial fracture-dislocation. CCC were chosen to supplement the stabilization of with fracture compression using a combination of CCC and sternal longitudinal plates.

Patient four had a painful nonunion of costal cartilage fractures that failed to heal effectively despite prior attempts at delayed fixation using plates and screws. CCC were used to stabilize cartilaginous nonunion arranged to provide multidirectional stabilization of this complex fracture pattern.

Conclusion: Nitinol has been used with success in four patients at our center with complex chest wall repairs. The unique characteristics of nitinol CCC, small footprint, ease of implant, continuous compression through structural memory, and versatility make it an ideal tool for stabilization of challenging anatomy. Long-term these clips may lead to decreased morbidity in this patient population. Further research is needed on sternal

plating using Nitinol clip implants. This may be a solution to complex unstable sternal fractures and chronic nonunion fracture patterns.

ePoster #19 | Clinical Science | Trauma/Burn/Critical Care

The Association Between Structural Determinants of Inequity and Hate Crimes

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Background: Violence due to firearms continues to perpetrate harm across the US. Specifically, firearm-related violence in the setting of hate crimes has resulted in large-scale deaths. Hate crimes, defined as criminal offenses that are at least partially motivated by identity-based prejudice, are a steadily increasing precipitant of trauma. However, little research has explored social and structural determinants as a root cause of hate crimes. The aim of this study was to examine the association between structural determinants and violent hate crimes. We hypothesized that markers of social and structural inequity would be associated with hate crimes.

Methods: This retrospective, ecologic study examined the novel Bias Incidents and Actors Study (BIAS), which contains characteristics of the perpetrators, victims, and nature of hate crimes. Structural inequity was examined using Income and Race-based Index of Concentration at the Extremes (ICE), and Gini index was obtained from American Community Survey data. Data was aggregated by the 51 largest Metropolitan Statistical Areas (MSA) in the US. The years 2009-2018 were used for a multivariate model examining structural determinants.

Results: Of the total 1,055 hate crimes, 224 (21.2%) were perpetrated with a firearm as the primary weapon. Sixty-five (29.0%) of firearm-related hate crimes were conducted by a perpetrator with mental illness and 61 (27.1%) had a perpetrator with a history of using drugs, alcohol, or both. Of 373 hate crimes analyzed from 2009-2018, 349 (93.6%) targeted a minoritized group and 114 (30.5%) were motivated by the victim being specifically black. As shown (Table), income inequality (Gini index) was associated with fewer hate crimes targeting black individuals (OR: 0.92, 95%CI: 0.88-0.96, $p< 0.001$). Greater privilege (ICE) was associated with less hate crimes targeting black individuals (OR: 0.96, 95%CI: 0.93-0.98, $p< 0.001$). Additionally, higher perpetrator high school graduation rates were associated with more hate crimes targeting black individuals (OR: 1.06, 95%CI: 1.02-1.10, $p=0.01$). Victim Asian identity was found to be associated with the primary weapon being a firearm ($\beta= 0.440$, $p=0.003$) while perpetrator mental illness was found to be negatively associated with firearm use ($\beta= -0.177$, $p<0.001$).

Conclusion: Social and structural determinants play an important role in violent trauma motivated by hate crimes. Specifically, these factors impact racially motivated hate crimes against black individuals in major US cities. In addition, firearms play a prominent role in the commitment of hate crimes. Further studies are needed to examine root causes of hate crimes with firearms so that preventive measures can be taken.

Table 1. Logistic Regression Examining Hate Crimes Targeting Black Individuals.

Characteristic	**OR**[1]	**95% CI**[1]	**p-value**
Index of Concentration at the Extremes	0.96	0.93, 0.98	<0.001
Gini Index	0.92	0.88, 0.96	<0.001
Unemployment Rate	0.87	0.71, 1.06	0.20
High School Graduation Rate	1.06	1.02, 1.10	0.01

[1] OR = Odds Ratio, CI = Confidence Interval

ePoster #20 | Clinical Science | Trauma/Burn/Critical Care

A Multidisciplinary Approach to Hospital Acquired Pressured Injury (HAPI) Prevention

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Background: The Trauma service at a Level 1 University Hospital began a practice of bi-weekly pressure injury examinations in 2022. Trauma patients are turned and fully examined twice per week and, in order to maintain adherence to the practice amongst a multitude of providers, a photo of pressure areas is uploaded into their electronic medical record for frequent review.

Methods: The local trauma database was queried to identify all trauma patients diagnosed with a HAPI between 2020 and 2023. The primary outcome examined was the number of HAPIs in the two years prior to bi-weekly examinations, compared with the number of injuries after. Secondary outcomes included length of stay and injury pattern.

Results: In 2020, 18 injuries were identified (1.2%) and in 2021, 23 injuries (1.6%). Following the practice of bi-weekly examinations, in 2022, 9 injuries were identified (0.6%), and in 2023, 11 injuries (0.6%). The odds ratio of HAPI occurrence after the start of examinations was 0.3952 (p value = 0.0007). There was also a statistically significant difference in length of stay, 8.65 days versus 30.3 days (p value = 0.00217). 90.2% of patients who developed a HAPI had a mobility limiting injury.

Conclusion: We noted a statistically significant decrease in the number of injuries after the institution of bi-weekly injury examinations. These results suggest that the practice of bi-weekly pressure sore examinations can lead to less HAPIs, shorter lengths of stay, and ultimately reduce the financial burden of these injuries.

ePoster #21 | Clinical Science | Trauma/Burn/Critical Care

Comparison of Penetrating Mechanisms in Attempted Self-Harm Trauma Patients

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Background: Suicide rates in the United States continue to climb, with firearms being utilized in more than 50% of suicides. Alongside this tragedy comes the population of injured patients after penetrating attempted self-harm. This population is not well studied in the trauma literature, and the influence of injury mechanisms on treatment strategies and outcomes is not well described. The aim of this study was to compare epidemiology and outcomes of patients presenting with self-inflicted penetrating trauma (SIPI). We hypothesized that SIPI from high velocity (HV) mechanisms would be associated with increased risk of mortality compared to those injured by low velocity (LV).

Methods: A retrospective analysis of patients presenting with intentional SIPI was conducted at a single Level I urban trauma center from 2018-2023. Patients with HV (i.e. firearm) and LV (i.e. knives or glass) mechanisms were compared. Patient demographics, history, injury mechanisms, and outcomes were collected. The primary outcome of interest was in-hospital mortality and secondary outcomes included discharge disposition and discharge referrals. Logistic regression analyses were performed to assess for risk factors for mortality.

Results: Of the 259 SIPI patients admitted over the 6-year period, 126 (48.6%) had LV and 133 (51.4%) HV injuries. The HV group was older (44 vs. 35 years, $p=0.008$) and more likely to be White (70.7% vs. 54.8%, $p=0.003$) compared to the LV group. A history of mental disorders (65.9% vs. 36.8%, $p<0.001$) and rates of substance abuse (47.6% vs. 19.5%, $p<0.001$) were higher in the LV group compared with the HV group. HV injuries were associated with higher rates of traumatic brain injury (TBI) (64.7% vs. 9.5%, $p<0.001$), facial injuries (23.3% vs. 0.8%, $p<0.001$), and rib injuries (9.8% vs. 0.0%, $p<0.001$). In addition, HV injuries had higher New Injury Severity Scores (25 vs. 2, $p<0.001$) and increased overall mortality (47.4% vs. 2.4%, $p<0.001$). In patients who died, rates of TBI were significantly higher compared to patients who survived to discharge (98.4% vs. 34.3%, $p<0.001$). In patients who survived to discharge, the LV group had higher rates of referral to outpatient mental health follow up (71.5% vs. 52.9%, $p=0.012$). On logistic regression HV mechanism was associated with increased odds of mortality (OR: 36.5, $p<0.001$).

Conclusion: HV mechanisms dramatically increase the risk of in-hospital mortality after SIPI. Trauma surgeons should be familiar with these injury patterns in the care of self-harm patients. As suicide attempts involving firearms are more lethal than other mechanisms, suicide prevention efforts should be centered around firearm use and access.

Table:

Logistic regression for risk factors influencing in-hospital mortality

Variable	Odds Ratio	95% Confidence Interval	p-value
High velocity mechanism	36.49	10.97-121.36	<0.001
Age	1.00	0.98-1.02	1.00
Male sex	1.22	0.54-2.77	0.640

ePoster #22 | Clinical Science | Trauma/Burn/Critical Care

Does Alcohol Use at the Time of a Traumatic Injury Increase the Incidence of Ventilator Associated Pneumonia?

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Background: In the United States, alcohol is the leading cause of both intentional and unintentional injuries Traumatic injuries associated with alcohol consumption result in diminished appropriate physiological responses for recovery. Our study aimed to investigate the association between an increased blood alcohol content level in patients presenting with a traumatic injury and subsequent development of ventilator-associated pneumonia (VAP).

Methods: A retrospective chart review was performed for all patients presenting to an academic Level 1 Trauma Center testing positive for ethanol in their bloodstream upon admission from 2016 through 2023. Patients who died or were discharged in less than forty-eight hours were excluded from the study. Patient demographics, previous medical history, and complications were recorded. The definition for the confirmatory development of VAP was based upon the American College of Surgeons Trauma Quality Improvement Program.

Results: A total of 314 patients were included in the study with 45 patients who qualified as positive for VAP. Surprisingly, the data shows a slightly lower average BAC for the VAP-positive group as compared to the average BAC for the VAP-negative group (0.14% vs. 0.16%, p=0.21). Patients who developed VAP had significantly higher Injury Severity Scores (ISS) (26.1 vs. 20.4, p=0.002), averaged more total ventilator days (21.0 vs. 7.1, p <0.0001), had a longer hospital length of stay (41.7 vs. 21.2 days, p <0.0001), and averaged a longer ICU length of stay (27.8 vs. 11.5, p<0.0001) compared to the VAP-negative group. No significant differences were observed between the groups in terms of comorbidities such as obesity, diabetes, asthma, COPD, or emphysema.

Conclusion: Based on the data collected, higher BAC levels do not appear to be associated with increased risk of developing VAP in trauma patients. However, patients that developed VAP had a significantly higher ISS (p=0.002) and averaged more total ventilator days (p= <0.0001) suggesting patients with more severe injuries and longer periods of mechanical ventilation are more likely to develop VAP.

ePoster #23 | Basic/Transactional Science | Trauma/Burn/Critical Care

Peritoneal Fluid Cytokine Levels in Patients Undergoing Damage Control Laparotomy Differ by Race

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Background: The peritoneum helps mediate the inflammatory response to abdominal injury. Cytokines are signaling proteins that facilitate wound healing, inflammation, and immune responses. For trauma patients in extremis, the role of the peritoneum remains poorly studied. Specifically, outcomes for high-risk populations and the corresponding peritoneal environment are not well studied. Our study's objective was to investigate the differences in peritoneal cytokine profiles between African American and white trauma patients undergoing damage control laparotomy (DCL).

Methods: Peritoneal fluid samples were collected from adult trauma patients undergoing DCL over one year at a Level 1 trauma center. Baseline demographic data were collected. Peritoneal fluid samples were collected at the initial surgery and at take backs. Cytokine concentrations were measured using a 10-analyte multiplex assay. Univariate analyses were performed.

Results: Twenty participants, fifteen African American (75%) and five white (25%), were enrolled in the study. African American patients were significantly younger ($p=0.006$) and more likely to have sustained a penetrating trauma ($p=0.03$). Injury severity scores (ISS) did not differ between the two groups ($p=0.66$). Higher concentrations of IL-1-β ($p=0.01$) and VEGF ($p=0.03$) were found in African American patients compared to white patients.

Conclusion: Significant differences in the peritoneal concentrations of IL-1-β and VEGF were found between African American and white trauma patients undergoing DCL. This may suggest differences in inflammatory and repair responses, though the effects on clinical outcomes remain unclear. Future research efforts will seek to increase sample size, evaluate different patient populations, and investigate the impact of age or trauma type on peritoneal cytokine variation.

ePoster #24 | Clinical Science | Trauma/Burn/Critical Care

Association between Access to Substance Use Treatment and Mass Shootings in the Major US Cities

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Background: Mass shooting incidents (MSI) are rising in the US. While substance use has mixed associations with violent behavior, the impact of access to substance use treatment on gun violence remains unclear. This study examined whether access to substance use treatment correlates with MSI in major US cities, hypothesizing that limited treatment access would increase MSI rates.

Methods: This cross-sectional study utilized data from the Gun Violence Archive (2015-2019) and the Opioid Environment Policy Scan (OEPS), aggregated and combined for 48 of the largest 51 US Metropolitan Statistical Areas (MSAs). MSI was defined as incidents with four or more victims. MSI rates were calculated per 100,000 people, and access to treatment was measured by distance to the nearest facility. Bivariate analysis and multiple linear regression were performed. Sociodemographic factors, including segregation index, poverty, unemployment, and high school diploma, were included in the analysis.

Results: Between 2015 and 2019, there were 1,152 MSI across 48 MSAs, resulting in 1,183 deaths and 5,022 injuries. Bivariate analysis showed no significant association between MSI and access to substance use treatment (p=0.50). However, MSI correlated positively with poverty (r=0.40, p<0.01) and unemployment (r=0.36, p=0.01). In adjusted linear regression, access to substance use treatment was not associated with MSI (p=0.70), while poverty (p=0.01) and no high school diploma (p=0.01) were associated with MSI.

Conclusion: Access to substance use treatment does not appear to significantly impact MSI. However, socioeconomic factors, particularly poverty and education, may influence gun violence. Further research should explore risk factors and targeted interventions for MSI prevention.

	Incidences of mass shooting per 100,000 population		
Predictors	*Estimates*	*CI*	*p*
Intercept	0.82	-1.74 – 3.39	0.52
Distance to substance use treatment	-0.04	-0.24 – 0.16	0.70
Segregation index	-0.01	-0.03 – 0.01	0.14
Percentage of population >= 25yrs old without a high school diploma	-0.13	-0.22 – -0.03	**0.01**
Unemployment rate	0.23	-0.29 – 0.75	0.38
Poverty rate	0.18	0.04 – 0.31	**0.01**
Observations	48		
R^2 / R^2 adjusted	0.304 / 0.222		

ePoster #25 | Clinical Science | Trauma/Burn/Critical Care

Does Patient Presentation Time Impact the Use of Damage Control Laparotomy in Trauma?

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Background: Damage control laparotomy (DCL) is a mainstay for the treatment of the severely injured trauma patient, but this procedure is not without risks when compared to definitive closure. Trauma patients can present at any time, and multiple studies have looked at the impact presentation time has on a variety of patient outcomes. However, there is a lack of studies which specifically evaluated for the impact presentation time may have on the propensity for a DCL in trauma patients. The objective of this study was to investigate if trauma patients presenting at night had a DCL performed at equivalent rates compared to similarly injured patients who presented during the daytime.

Methods: A retrospective chart review was conducted of adult patients who presented at a Level 1 trauma center and underwent an exploratory laparotomy for their injuries from July 2012 to December 2021. The data collected included patient demographics, patient presentation time, whether or not a DCL was performed, Injury Severity Score (ISS), length of stay, and patient outcomes including 90-day patient mortality. A patient was classified as presenting during the night at their presentation time if the sun was below the horizon as determined by publicly available astronomical records. Univariate analysis was performed with $p<0.05$ considered to be significant.

Results: A total of 474 patients met inclusion criteria for our study with 302 (63.7%) presenting at night. 228 (48.1%) of all patients had a DCL, with 145 (63.59%) of the night cohort receiving a DCL. However, there was no significant difference between daytime and nighttime DCL rates, intra-op mortality rates, or 90-day mortality rates, even when controlling for ISS ($p>0.05$).

Conclusion: The results from this study demonstrated no increased rate of DCL for trauma patients who presented at night compared to daytime, nor any difference in mortality.

ePoster #26 | Clinical Science | Trauma/Burn/Critical Care

Physician Experience and Role Affects Perceived Satisfaction and Benefit of REBOA

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Background: Partial resuscitative endovascular balloon occlusion of the aorta (pREBOA) was developed to more effectively accommodate complete and partial aortic occlusion for traumatic hemorrhage in the torso. Although its use is increasingly more common, factors such as perceived technical challenges, satisfaction, and benefit affect the use of it. We hypothesized that the experience level of the practitioner had an effect on the use and perceived benefits of pREBOA.

Methods: From 9/2021 to 12/2023, physicians at 16 trauma centers reported on 350 REBOA cases, including their experience with vascular access and decision-making. They rated purpose, benefits, challenges, and satisfaction. Statistical analysis used Spearman method, linear regression, and t-tests.

Results: Training/experience of person gaining vascular access positively correlated with benefit ($r=0.200$, $p=0.001$) and satisfaction ($r=0.122$, $p=0.043$). Training/experience of person deciding to do REBOA positively correlated with benefit ($r=0.151$, $p=0.012$) but not satisfaction ($r=0.091$, $p=0.131$). Benefit was a positive predictor of satisfaction ($p=<0.001$). There was a significant difference in benefit ($p=0.002$), technical challenges ($p=0.034$), and satisfaction (0.034) between LE and HE of person deciding to do REBOA but only a significant difference in purpose ($p=0.024$) and benefit ($p=0.001$) when comparing LE and HE of person gaining vascular access (LE = <3 years, HE = ≥3 years of experience).

Conclusion: There are many factors affecting a practitioner's perception of REBOA usage. Our study found this was different between those gaining vascular access and those deciding to perform REBOA, indicating that the use of this adjunct may be affected by the experience and role of the practitioner.

ePoster #27 | Clinical Science | Trauma/Burn/Critical Care

Exploring the Association Between Mental Health Access and Mass Shootings in Major US Cities

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Background: Mass shooting events (MSEs) in major US cities continue to rise, with individuals experiencing mental illness unfairly stereotyped as primary perpetrators. Although research suggests mental illness is not associated with increased violent crimes, the role of mental health service accessibility (MHSA) in MSEs remains unclear. We hypothesized that access to MHSA is significantly associated with MSEs.

Methods: The Gun Violence Archive was used for MSEs (shooting events with four or more victims) for the largest 51 US cities from 2015 to 2019 and merged with MHSA data (distance to nearest provider) from the Opioid Environment Policy Scan. Segregation indices and socioeconomic covariates were from the Brookings Institution and the American Community Survey. Pearson correlation and linear regression were performed to analyze the association between MHSA and MSEs.

Results: From 2015 to 2019, 1,152 incidents resulted in 1,183 fatalities and 5,022 injuries. Pearson correlation showed no association between MHSA ($p = 0.70$), segregation index ($p = 0.38$), or education level ($p = 0.83$) and MSEs. However, disability rate ($p < 0.01$) and poverty rate ($p < 0.01$) were associated with MSEs. In multivariate analysis (Table 1), only the segregation index was significant; MHSA ($p = 0.22$), disability rate ($p = 0.27$), poverty rate ($p = 0.06$), and education level ($p = 0.07$) were not significant.

Conclusion: Access to mental health providers alone does not significantly correlate with MSEs. Broader socioeconomic factors may have greater impacts on the likelihood of MSEs. Further studies are needed to identify the social determinants driving the increasing gun violence.

	Incidences of mass shooting per 100,000 population		
Predictors	*Estimates*	*CI*	*p*
Intercept	1.20	-0.91 – 3.31	0.26
Distance to mental health providers	-0.08	-0.21 – 0.05	0.22
Segregation index	-0.02	-0.04 – -0.00	**0.03**
Percentage of population with disability	0.08	-0.06 – 0.22	0.27
Poverty rate	0.14	-0.01 – 0.30	0.06
Education level (percentage of population >= 25yrs old without a high school diploma)	-0.10	-0.20 – 0.01	0.07
Observations	48		
R^2 / R^2 adjusted	0.321 / 0.241		

Table 1Multivariable Linear Regression Analysis of Access and Socioeconomic Variables on MSE Incidence in Major US Cities

ePoster #28 | Clinical Science | Trauma/Burn/Critical Care

Investigating Access to Electricity as a Social Determinant of Gun Violence in Major US Cities

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Background: The reliability of utilities has been recognized as a key social determinant of health (SDOH). SDOH are relevant in the occurrence of firearm injuries in United States (US) cities; however, the relationship between access to utilities and firearm violence is unknown. We hypothesized that electric utility access would be associated with firearm homicide in Metropolitan Statistical Areas (MSAs).

Methods: An ecological cross-sectional analysis was performed to examine firearm homicides from 2017 to 2021 in the 51 largest US MSAs. Electric utility performance was obtained from the Citizens Utility Board. Firearm homicide data was obtained from the Gun Violence Archive. US Census data was used to calculate average values of Gini Index per MSA. Negative binomial Poisson regression models were used to model the rates of firearm homicide by reliability of electricity and household electricity costs as a percentage of income.

Results: On bivariate analysis, Gini Index (IRR= 1.20; 95% CI= 1.00-1.44; p= 0.04), unemployment rate (IRR= 1.91; 95% CI= 1.07-3.56; p= 0.048), and poverty rate (IRR= 1.20; 95% CI= 1.06-1.37; p= 0.01) were associated with firearm homicides. On multivariate analysis, increased reliability of electricity was associated with decreased firearm homicides. Gini Index and percent unemployed were associated with firearm homicides, and increased total household electricity costs as a percentage of income was associated with decreased fatal shootings (Table 1).

Conclusion: Improved reliability of electric utilities may decrease risk of gun violence in major US cities. Further research is needed to determine how the cost of electricity may influence the occurrence of firearm homicides.

Table: Poisson Regressions Examining Reliability of Electric Utilities and Total Household Electricity Cost as Percent of Income

	IRR[1]	95% CI[1]	p-value		IRR[1]	95% CI[1]	p-value
Gini Index	1.06	0.99-1.13	0.047	**Gini Index**	1.13	1.05-1.21	<0.001
Average Percent Unemployed	2.89	2.30-3.64	<0.001	**Average Percent Unemployed**	2.81	2.22-3.55	<0.001
Electric Utility Reliability	0.99	0.98-1.00	0.01	**Percent of Income Spent on Electricity**	0.99	0.98-0.99	<0.001

[1]IRR = Incidence Rate Ratio, CI = Confidence Interval

ePoster #29 | Education | Trauma/Burn/Critical Care

From Bay to Bedside: Improving Trauma Team Prehospital Relationships

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Background: Camaraderie among healthcare workers is essential to the development of practices to ensure efficient, thorough, and responsible treatment of patients. Additionally, the establishment of a healthy working relationship between the prehospital and in-house hospital teams creates a far-reaching network of providers. At LSU Health Shreveport, this includes emergency medical services (EMS), Acadian Air Med, and all trauma team and emergency department staff (ED).

Methods: This project aims to implement strategies that promote increased teamwork between members of the prehospital and intrahospital team, ultimately resulting in a better professional relationship for the entire trauma team and improved outcomes for patients. In addition to a traditional time-out conducted by the trauma team, all members of the trauma team were given a recognition pin to acknowledge their effort during trauma calls. Representatives from both Acadian Air Med and Shreveport EMS were also invited to morbidity and mortality meetings to encourage productive and honest communication and feedback regarding standardization and optimization of trauma protocol within their own organizations.

Results: The effects of our strategy were measured by tracking attendance of representatives from the prehospital provider team.

Conclusion: We believe that application of ACGME Core Competencies such as psychological safety and systems-based practice, in addition to the development of interpersonal and communication skills, allows for honest communication and the exchange of constructive feedback. When applied to daily practice, this strategy creates a holistic approach to patient-centered care in a trauma setting.

ePoster #30 | Basic/Transactional Science | Wounds

MITIGATION OF PRESSURE INJURIES UTILIZING MACHINE LEARNING AND AN INERTIAL WEARABLE

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Background: Pressure ulcers, also known as bed sores or pressure injuries (PIs) have a significant negative impact on patients and the health care system through an increase in pain experienced by the patient, longer stays in the hospital, higher probability of nosocomial infections, and ultimately increased morbidity and mortality which contribute significantly to the financial impact of managing the public hospital system.
PI care is complex, and improved PI prevention would give a better quality of life to the patients and reduce healthcare costs. These soft tissue injuries form due to a prolonged period of pressure applied to an area of the skin but are influenced by many factors, including skin moisture and skin condition and occur when pressure reduces or cuts off blood flow to the skin. Certain predispositions, such as poor circulation or malnutrition, can lead to faster progression and/or increased severity of the ulcers. Experts estimate that 2.5 million Americans develop PIs every year, with essentially anyone being susceptible to them. They are most often found in bony areas, such as the tailbone or lower spine area, heels, or shoulder blades. A meta-analysis of PI observational studies concluded that the most affected area was the sacrum with a frequency of 44% and the buttocks with a frequency of 15%. A lack of blood flow can cause a pressure wound injury to develop in as little as two hours. This is when skin cells on the epidermis (human skin's outer layer) begin to die. As the dead cells break down, a PI forms. There are multiple stages of bed sores, ranging from a simple red or pink spot on the skin to the most severe cases of exposed muscle, tissue, or bone.
The development of PIs can lead to several complications, from sepsis to pain, cellulitis, depression, and even death. The mortality rate has been evaluated to be as high as 60% within one year of hospital discharge for older patients who developed a PI during their stay. A study in 1990 reported 22% mortality over a 6-year follow-up of 23 patients with pressure ulcers. In 2005, there was a report of 68.8% mortality amongst elderly patients with stage 3 and 4 PIs, because of secondary systemic complications.

Methods: One of the objectives of this project was to identify the features of health records that can be captured within the first 24-48 hours of the patient's admission and use them to model and estimate the likelihood of PIs forming during their hospital stay. We identified the MIMIC-III data set as a source of data, as it is one of the largest patient data sets from the ICU setting and contains features from all lab tests run on a patient, from oxygen levels to blood pressure, combined with other information in the patient's electronic health record. When a patient arrives to the hospital, the patient's data would then be entered into this model and if they are identified to be at a higher risk, they would be equipped with a a microcontroller-based inertial wearable that would track and time the patient's movement and provide the hospital personnel with alerts to manually turn the patient to a different position.

Results: The inertial wearable device is based on a microcontroller (ESP8266), gyroscope/accelerometer (MPU6050), voltage regulator, and battery components that are soldered and connected using a prototyping board. The microcontroller is connected to the MPU6050 gyroscope/accelerometer that captures the data of inertial movements of the patient. The MPU6050 Gyroscope/Accelerometer contains a 3-axis gyroscope, a 3-axis accelerometer, and a Digital Motion Processor (DMP). A custom-designed Printed Circuit Board (PCB) is created for the final system after the prototype was designed and tested, and the PCB and system are attached to a wearable harness.

The microcontroller collects the gyroscope and accelerometer values (accelX, accelY, accelZ, gyroX, gyroY, gyroZ). It sends them, using WiFi, to a PHP script executed on the Web server which is hosted on a Raspberry Pi Zero W minicomputer. The accelerometer indicates the patient's orientation while the gyroscope indicates the patient's rotational motion – the patient's motion in the X/Y/Z direction. The PHP script receives the data and inserts it into the database (see MySQL Database Storage) for additional processing.

The data map of the full system is shown in Figure 2. The Mac Address, Gyroscope, and Accelerometer data are provided by the ESP8266 microcontroller. This data is passed to the storeData.php script on the Raspberry Pi server. The wearable device is placed at the sternum area with the Velcro strap wrapped around the patient's torso. The patient is positioned and orientation (accelX/Y/Z) as well as movement (gyroX/Y/Z) values are recorded for six different bed positions (supine flat bed, right side-lying flat bed, left side-lying flat bed, supine torso at 30-degree elevation, right side-lying torso at 30-degree elevation, left side-lying at 30-degree elevation). These values are broadcast from the ESP8266 microcontroller to the Web Server hosted on the Raspberry Pi Zero W and stored in the database. The microcontroller on the wearable device is put into deep sleep mode between subsequent runs and consumes at that time approximately 8-20μA, extending the battery life.

The data is sent into the database by the microcontroller from the gyroscope/accelerometer: the MAC address, accelX/Y/Z values, and the gyroX/Y/Z values. The wearable device provides us with information on the length of time the patient has been in a certain position. Figure 7 shows the direction the accelerometer vectors are pointing to. For example, when the patient is in the supine position, or lying on their back, the z accelerometer value will be the greatest. On the other hand, when the patient is lying on either their left or right side, the absolute x accelerometer values will be the largest. The gyroscope values show the angular velocity radians per second around the given axis the patient is moving while the data is being captured. Therefore, if a patient moves at the exact time the data is captured, the gyroscope values will indicate that. The data can infer the patient's position on the bed based on the accelerometer and gyroscope data. Looking at the last n entries in the database, we can determine the duration that the patient has been in one position and use this information to alert healthcare workers of the need for the patient to be rotated.

Conclusion: In conclusion, this research presents a machine learning model based on the MIMIC-III public healthcare dataset to identify the ICU patients that at the highest risk for the formation of pressure ulcers. Using features available within 24-48 hours of their ICU arrival, we can now identify the patients that are at the highest risk for developing PIs.

Once high-risk patients are identified, increased attention is directed towards them and the intervals between rotations (by the nurses) are shortened. Alternatively, these patients can be equipped with an inertial wearable in order to provide healthcare providers with audible alerts and notifications when these patients must be turned to prevent the formation of PIs. In creating a wearable inertial device that includes a gyroscope and accelerometer, the patient's position and time in the position is identified and tracked.