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ABSTRACTS

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1 Comparing Orthotopic Colorectal Cancer Mouse Models for Primary Tumor Growth and Subsequent Metastasis

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Background: Colorectal cancer is the third most common cancer and second leading cause of cancer-related deaths in the United States. Having previously established primary tumor growth that relies on lymph node stromal cells (HK) by intrarectal (IR) injection in nonobese diabetic/severe combined immunodeficiency mice, we sought to compare different orthotopic models that more accurately emulate human colorectal cancer distant organ metastasis.

Methods: Luciferase-tagged HT-29 colorectal cancer cell line was coinoculated with HK cells and then injected into the submucosa of the rectum (9 mice, IR), the cecum wall (21 mice, IC), or introduced onto the rectum following topical acetic acid treatment (9 mice, acid). Tumor growth was monitored weekly by luciferase activity using the In Vivo Imaging System. The mice were sacrificed based on primary tumor size and signs of systemic decline. Their liver and lungs were evaluated for metastases via histology and bioluminescent imaging photon level $>10^5$.

Results: In the IR group, tumor take was 66.66%, and all mice survived to day 14 when the average tumor bioluminescent imaging was 8.00×10^8 photons. In the IC group, tumor take was 22.22%, and 18 survived until day 14, when their average tumor bioluminescent imaging was 2.39×10^5 photons. Tumor take in the acid group was 44.44%, and all of the mice survived until day 14, when average tumor bioluminescent imaging reached 5.65×10^6 photons. While there was bioluminescent imaging evidence of possible liver and lung metastasis in each group, histological liver metastasis was apparent in only the IC and acid models.

Conclusion: Even though the IR method had both the highest average primary tumor bioluminescent imaging on day 14 and highest tumor take rate, there was no histologic evidence of liver metastasis in this group.

2 Retrospective Review of Candidemia at a Tertiary Care Hospital in New Orleans

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Background: Candidemia remains a serious medical problem worldwide with high morbidity and mortality despite current available treatments. In recent years, non-albicans *Candida* species have increased in prevalence and in rates of antifungal resistance. We performed a retrospective review of all candidemia cases from January 2011 to December 2013 at Ochsner Medical Center in New Orleans.

Methods: This review yielded 129 patients. Data were collected from the electronic medical record and analyzed in SAS (v.9.4, SAS Institute), using the Pearson X2 test. All isolates were stored, and susceptibility testing was performed by Vitek® 2 System.

Results: The most common species were *C. glabrata* (46.5%), *C. albicans* (38.0%), and *C. parapsilosis* (15.5%). No significant differences were found in sex (male=48%) or age distribution between species. Overall mean age was 55.8 $\pm$ 19.96 years. The most common source of candidemia was line related (20%). Patients in the intensive care unit were more likely to have *C. glabrata* (50%) or *C. albicans* (41%) than *C. parapsilosis* (9%). Patients in the surgical services also had *C. glabrata* (54%) as the main species; however, on the medical services was *C. albicans* (45%). *C. glabrata* was more frequent in patients with previous antifungal prophylaxis (71%; $P=0.03$) with the most common agent being fluconazole (91%). These patients were also more likely to receive empiric antifungal treatment (63%; $P=0.02$). During this time period, 68 *C. glabrata* isolates were available for fluconazole susceptibility testing; 57 (84%) were susceptible-dose dependent, and 11 (16%) were resistant. All-cause mortality was 68% and attributable was 27%. Only 28% of this cohort had eye exams; 11% of those revealed candidemia-related changes.

Conclusion: The species distribution has been changing during the past few years based on antifungal pressure, and morbidity and mortality remain high. We need to have a high index of suspicion to institute early treatment in these at-risk patients.

3 Detection of Biomarkers for Anal Cancer in Human Immunodeficiency Virus+ Individuals

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Background: The rates of anal cancer have increased during the past 30 years. Human immunodeficiency virus (HIV)+ males (36%) and females (26%) have high rates of anal dysplasia coupled with high rates of anal human papillomavirus (HPV) detection (50%-90%). Anal cancer prevention involves Pap smear detection of abnormal cells followed by biopsy and treatment that leads to >50% of HIV+ individuals potentially requiring biopsies. Our objective is to discover potential biomarkers of anal dysplasia that could better triage individuals with abnormal anal Pap smears.

Methods: HIV+ males and females were enrolled from outpatient clinics at Ochsner Medical Center and Interim LSU Hospital. After informed consent, a sexual history questionnaire was obtained and anal swabs were collected for analysis of cytology, viral infection (HPV, Epstein-Barr virus [EBV]), and local cytokines.

Results: Thirty-four males from Ochsner Medical Center (72% Caucasian) and 47 males and females from Interim LSU Hospital (63% African American) were enrolled. For the entire cohort, the mean age was 47, the median CD4 cell count was 416, and HIV viral load was 39. An abnormal Pap smear was seen in 71%, and dysplasia was seen in 43%, with 80% being positive for high-risk HPV. More African Americans had a high-grade Pap smear (33%) compared to Caucasian individuals (6%, $P=0.06$). HPV and EBV were detected in 71% of those with dysplasia compared to 46% of those without ($P=0.16$). Lower amounts of IL-4 and IL-10 were found in those with dysplasia (47.5 ng/mg, 47.6 ng/mg, respectively) vs those without (83.8 ng/mg, 80.2 ng/mg, $P=0.068$, $P=0.054$).

Conclusion: High rates of anal dysplasia and anal HPV are seen in HIV+ individuals from both Ochsner Medical Center and Interim LSU Hospital. Being African American, the presence of HPV and EBV in anal samples, and lower amounts of IL-4 and IL-10 may be potential biomarkers. Additional subjects at both Interim LSU Hospital and Ochsner Medical Center are currently being enrolled to further explore these markers.

4 *In Vitro* Synergy of Polymyxin B and Rifampin Against Polymyxin B-Resistant *Enterobacter cloacae*

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Background: Multidrug-resistant (MDR) *Enterobacter* infections have increased during the last 10 years, including those resistant to polymyxin B. The combination of polymyxin B and rifampin has shown *in vitro* synergy against MDR Gram-negative bacteria such as *Acinetobacter baumannii* and *Klebsiella pneumoniae*. We evaluated the combination of polymyxin B and rifampin for potential synergy against *Enterobacter cloacae*.

Methods: Seven genetically unique polymyxin B-resistant *E. cloacae* clinical isolates were collected from 2010-2013. Isolates were identified by the Vitek® 2 System and genotyped by rep-PCR. Due to reported reliability problems when testing polymyxin B by Etest and broth microdilution, both methods were performed for polymyxin B and rifampin in triplicate (mean used for comparison). An Etest synergy method (Pankey et al, 2013, *DMID* 77:220-6) using polymyxin B (½ minimum inhibitory concentration [MIC]) + rifampin (1 × MIC) was performed in triplicate. The mean value was used to calculate the summation fractional inhibitory concentration ($\sum$FIC): synergy <0.5.

Results: Essential agreement (within 2 twofold dilutions) of MICs between broth microdilution and Etest methods was 86% (6/7 isolates) for polymyxin B and 100% for rifampin. However, both methods showed 100% categorical agreement (MICs within the same interpretive category) for polymyxin B. The combination of ½ MIC polymyxin B and 1 × MIC rifampin demonstrated synergy by an Etest method against all 7 of the polymyxin B-resistant *E. cloacae* isolates tested.

Conclusion: Further studies using this combination against additional isolates are needed. *In vitro* synergy may or may not correlate clinically.

E.cloacae isolates	**Polymyxin B**	**Rifampin**	**Etest Synergy**
(n=7)	**Mean Etest MIC**	**Mean Etest MIC**	**Mean $\sum$FIC Interpretation**
1	192	>32	0.02 synergy
2	32	>32	0.2 synergy
3	64	>32	0.02 synergy
4	12	>32	0.3 synergy
5	16	>32	0.1 synergy
6*	24	>32	0.2 synergy
7*	32	>32	0.2 synergy

*Carbapenemase producers

5 First *cfr* Gene Identified in *Enterococcus faecium* in the United States

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Background: Vancomycin-resistant *Enterococcus faecium* (VRE) infections are often treated with linezolid. VRE isolates are submitted to JMI Labs yearly for their SENTRY Antimicrobial Surveillance Program in the United States. Linezolid-resistant isolates are further evaluated for resistance mechanisms.

Methods: Isolate identification was confirmed by MALDI-TOF-MS. In 2012-2013, 369/508 VRE isolates were collected and tested for susceptibility by broth microdilution. Seven VRE isolates were resistant to linezolid (minimal inhibitory concentrations $\geq$4 μg/mL). These isolates were screened for chloramphenicol-florfenicol resistance (*cfr*) gene and mutations in the 23S rRNA and ribosomal proteins (L3, L4). Typing was performed by pulsed-field gel electrophoresis and multilocus sequence typing. Location of *cfr* was determined by Southern blot hybridization of ICeuI digests of the genomic DNA using a digoxigenin-labeled *cfr*-specific probe. Whole genome sequencing and analysis were used to study the *cfr* genetic context. *Cfr* genes were cloned and tested for susceptibility in an isogenic background.

Results: Two of the seven linezolid-resistant VRE isolates were *cfr* positive. The first (2012) was from the peritoneal fluid of a kidney transplant patient. The second (2013) was from the blood of a sarcoidosis patient with disseminated *Nocardia* infection. Both isolates exhibited a VanA-phenotype and were susceptible to daptomycin, doxycycline, and quinupristin/dalfopristin. The genetic context was similar to the *cfr*-carrying Tn6218 described in *Clostridium difficile* (GenBank #HG002396). However, this *cfr* gene showed only 75% similarity with the *cfr* usually detected in staphylococci. Cloning and expression experiments demonstrated that both genes confer a similar resistance profile.

Conclusion: This study reports the first 2 cases of *cfr* in enterococci in the United States and emphasizes the capability for gene mobilization. Linezolid-resistant *E. faecium* should be screened for this gene.

Molecular findings:	**18203 (2012)**	**18961 (2013)**
cfr gene location	chromosome	chromosome
23S rRNA	G2576T	G2576T
L3, L4	Wild Type	Wild Type
Molecular typing: PFGE/MLST	EFM448B/794	EFM448B/794

6 *In Vitro* Synergistic Activity of Caspofungin and Polymyxin B Against Fluconazole-Resistant *Candida glabrata*

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Background: *Candida* species account for most invasive fungal infections, and the emergence of fluconazole and caspofungin resistance is problematic. Overcoming resistance with synergism of 2 drugs may be useful. In a recent *in vitro* study, colistin (polymyxin E) and caspofungin were found to act synergistically against fluconazole-resistant and -susceptible *C. albicans* isolates. The purpose of our study was to extend this finding by evaluating polymyxin B and caspofungin for *in vitro* synergy against fluconazole-resistant *C. glabrata* isolates.

Methods: Seven fluconazole-resistant *C.glabrata* bloodstream infection isolates were obtained in 2010-2011. Two isolates were also resistant to caspofungin. Isolates were identified using the API 20C system and genotyped by rep-PCR. Minimum inhibitory concentrations (MICs) for fluconazole, caspofungin, and polymyxin B were determined by Etest®. Clinical and Laboratory Standards Institute breakpoints used for MIC (μg/mL) interpretation were fluconazole, ≤32 susceptible-dose dependent; ≥64 resistant (R); caspofungin, ≤0.12 susceptible (S); 0.25 intermediate (I); and ≥0.5 R. There are no interpretive guidelines for testing polymyxin B against *C. glabrata*. Synergy testing with caspofungin (1 × MIC) and polymyxin B (½ MIC) was performed in triplicate, using a modified bacterial Etest MIC:MIC synergy method, with final MICs read at 24 hours. The summation fractional inhibitory concentration (∑FIC) was calculated for each isolate (mean used). Synergy was defined as ∑FIC ≤0.5; additivity, >0.5-1; indifference, >1-4; and antagonism, >4.

Results: Etest MICs (μg/mL) were fluconazole, 48 to >256 (100% R); caspofungin, 0.047-0.38 (57% S, 14% I, 29% R); polymyxin B, 96-384. Using our modified Etest method, 4/7 (∑FICs, 0.2-0.5) of the isolates showed *in vitro* synergy, and 1/7 showed additivity (∑FIC, 0.6). The caspofungin-resistant isolates showed indifference (∑FICs, 1.7, 3.3).

Conclusion: Caspofungin-susceptibility may be required for synergism between caspofungin and polymyxin B. Further synergy testing with caspofungin and polymyxin B using lower concentrations of polymyxin B and additional fluconazole- and caspofungin-resistant *C. glabrata* isolates should be performed. *In vitro* synergy/additivity may or may not correlate with *in vivo* benefit.

7 Reversal of Epigenetic Chromatin Modifications Has Additional Effects on Renin-Angiotensin System Blockade in Diabetic Podocytopathy

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8 Targeted Mutations at P66 Locus Enhance Stem Cell Survival and Function

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9 Identification of microRNAs in the Cerebrospinal Fluid and Plasma as a Marker for Intracerebral Hemorrhage

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Background: Intracerebral hemorrhage in patients with stroke carries a significant morbidity and mortality. Access to brain tissue is often challenging and may lead to increased morbidity. Cerebrospinal fluid has been used as a surrogate for tissue samples and may reflect the local events of injured brain tissue. MicroRNAs (miRNAs) are regulatory RNA molecules that are deregulated in different neurological diseases. Circulating miRNAs have also been found in body fluid, including blood and cerebrospinal fluid. In this study, we examined the expression profile of miRNAs in the cerebrospinal fluid and plasma of patients with intracerebral hemorrhage.

Methods: After informed consent, blood and/or cerebrospinal fluid were collected from patients via an external ventricular drain. Total RNA containing miRNAs was isolated from plasma (n=3) and cerebrospinal fluid (n=5), reverse transcribed, and then real-time qPCR amplification using the Exiqon miRCURY LNA primers was done. Using this system, we screened the human miRNome panels containing 752 well-characterized miRNAs. Cycle threshold data were obtained using the regression method. Quality control assessment, global mean normalization, and differential gene expression were analyzed using GenEx data analysis software (Exiqon).

Results: Quality control assessment using RNA and cDNA spike-in controls were within acceptable values. Hemolysis analysis for possible cellular-derived miRNA contamination was negative. Statistical analysis for differentially expressed miRNAs found 111 miRNAs that were significantly expressed ($P<0.01$) at greater than 3-fold higher in cerebrospinal fluid and 42 miRNAs that were expressed at greater than 3-fold higher in plasma.

Conclusion: We demonstrated that miRNAs are present in the cerebrospinal fluid of patients with intracerebral hemorrhage. Cerebrospinal fluid miRNAs are potentially useful noninvasive biomarkers for diagnosis of hematoma enlargement, cerebral edema, and mortality. A current focus in our laboratory is to confirm and correlate miRNA expression to clinical outcome based on intracerebral hemorrhage blood volume classifier.

10 TGF-β and Forskolin Regulation of Schwann Cells Nonmyelinating Proliferative State

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Background: Schwann cells undergo a transition from a myelinating to a nonmyelinating proliferative state in response to peripheral nerve injury. Our previous work using a chronic denervation model has demonstrated that transforming growth factor-β (TGF-β) and forskolin reactivated Schwann cells and promoted axonal regeneration. In this study, we examine the effects of TGF-β and forskolin on the expression of myelin basic protein, peripheral myelin protein-2 (PMP-2), and fibroblast growth factor-7 (FGF-7) in cultured Schwann cells.

Methods: Schwann cells were isolated from the sciatic nerve of adult Sprague Dawley rats. Schwann cells (5×10^5 cells) were placed on a poly-L-lysine–coated 12-well plate for 6 days, starved for 17 hours, and stimulated 24 hours with forskolin (0.25 or 0.5 uM), TGF-β (1 or 5 ng/mL), or TGF-β plus forskolin. Total RNAs were isolated and reverse transcribed, followed by TaqMan qPCR amplification. Cycle threshold data were normalized to the ribosomal reference gene, and fold change over untreated Schwann cells was analyzed using the delta-delta cycle threshold method.

Results: TGF-β (1 ng/mL) and TGF-β plus forskolin (0.5 uM) treatment resulted in a 5.3- and 3.5-fold decrease in expression of FGF-7 over controls. Treatment with TGF-β (5 ng/mL) or forskolin (0.25 uM) resulted in a 9.1- and 2.2-fold reduction of FGF-7 expression. Expression of myelin basic protein decreased 3.7- and 6.7-fold with TGF-β (1 ng/mL) and TGF-β/forskolin (0.5 uM), respectively. Similarly, TGF-β (5 ng/mL) and TGF-β/forskolin (0.25 uM) resulted in 2.2- and 5.2-fold decrease in myelin basic protein expression. Expression of PMP-2 was not affected in all treatments. However, PMP-2 expression decreased 4.7-fold with 5 ng TGF-β, 3.9-fold with 2.5 uM forskolin, and 2.9-fold with TGF-β/forskolin.

Conclusion: We showed TGF-β and forskolin treatments lead to decreased myelin basic protein and PMP-2 expression that correlate with the nonmyelinating state of Schwann cells *in vivo*. Inhibition of FGF-7 may be necessary to maintain Schwann cells in a proliferative, nonmyelinated state at the site of injury.

11 Chemosensitivity of Primary and Metastatic Brain Tumors to 4-Demethyl-4-Cholesteryloxycarbonylpenclomedine (DM-CHOC-PEN) and Temozolomide

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Background: The gold standard in treatment of high-grade astrocytomas includes resection, concomitant temozolomide, and radiation followed by maintenance temozolomide. The efficacy of temozolomide is limited by drug resistance mediated by O^6-methylguanine-DNA methyltransferase (MGMT). Brain metastases are difficult to treat, and currently no standard chemotherapeutic therapies exist. DM-CHOC-PEN is a polychlorinated pyridine cholesteryl carbonate whose mechanism of action is via alkylation of DNA at N^7-guanine. This agent has had early therapeutic success in treating both primary and metastatic central nervous system malignancies in phase 1 and phase 2 clinical trials.

Methods: To better understand the sensitivity and mechanisms of resistance in primary and metastatic CNS tumors, we collected tissue from subjects (n=38) enrolled between March 2014 and January 2015 for chemosensitivity studies. These included high-grade astrocytomas (9), metastatic brain tumors (6), meningiomas (6), and other more benign tumors such as pituitary adenomas (4), hemangioblastoma (1), and chondrosarcoma (1). Using viable tumor cell explants from surgery, cells were grown under standard conditions (RPMI/FBS, 5% CO_2, 37°C), and *in vitro* chemosensitivity profiles were obtained comparing DM-CHOC-PEN vs temozolomide and other commonly used anticancer agents.

Results: Tumor cells exhibited higher susceptibility to DM-CHOC-PEN than to temozolomide (RR=3.19, P=0.0029, 95% confidence interval, 1.3-7.8 vs temozolomide). In a subgroup analysis of high-grade astrocytomas, atypical meningiomas, and secondary metastases in this cohort, an association was noted between temozolomide-resistance (μ_{IC50}=3.3, SD=0.46) and DM-CHOC-PEN-sensitivity (μ_{IC50}=1.0, SD=0.26) using two-sample independent, Student t test with Fisher exact P value (P=0.0001, t[23.72]=4.5, df=27.17).

Conclusion: These preliminary results suggest that DM-CHOC-PEN may promote cell death in tumors possessing acquired MGMT-mediated drug resistance. Furthermore, it supports roles for this promising new agent in the treatment of primary and metastatic brain tumors and in treatment of high-grade astrocytomas, either in combination with temozolomide or alone in cases of temozolomide resistance. (Study supported by NCI/SBIR grant R43/44CA132257.)

12 A Comprehensive Virome Assessment in Brain Tissue Using Next Generation Sequencing Suggests No Tumor Virus Association

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Background: Glioblastoma multiforme (GBM) is a devastating disease with poor survival rates. Human cytomegalovirus (HCMV) was reported in GBM more than a decade ago, and this finding has the potential to increase our understanding of the disease and offer a potential tumor-specific therapeutic target. Because of this promise, a fair amount of time, energy, and money has been directed toward understanding and utilizing this connection for eventual therapeutic purposes. Despite these ongoing efforts, the association remains controversial.

Methods: Publicly available sequencing datasets from the Cancer Genome Atlas, including RNA-seq datasets from primary GBM (n=157), recurrent GBM (n=13), and normal brain (n=5) and whole genome sequencing datasets from primary GBM (n=51), recurrent GBM (n=10), and normal matched blood samples (n=20) were analyzed. Fifty meningioma whole genome sequencing datasets were also analyzed. Sequence reads were aligned to a reference genome containing a human genome (hg19) and a library of virus sequences known to infect humans using the aligner STAR.

Results: Although low abundance of viral reads was detected in some samples, further analysis determined that these reads were likely artifacts or incidental infections. For instance, human herpesvirus (HHV) 6 and 7 aligned viral reads were found in all whole genome sequencing and some RNA-seq datasets, but further analysis demonstrated that these were probably derived from the homologous human chromosomal telomeric-like repeats, TAACCC. In addition, despite detection of low-level Epstein-Barr virus viral reads, these reads were likely from infiltrating B cells. Finally, low-level HCMV reads were detected but were determined to likely originate from laboratory expression vector contamination.

Conclusion: This analysis raises the possibility that viruses are not associated with GBM.

13 Toward Development of Artificial Nucleases Based on Functionalized Locked Nucleic Acids

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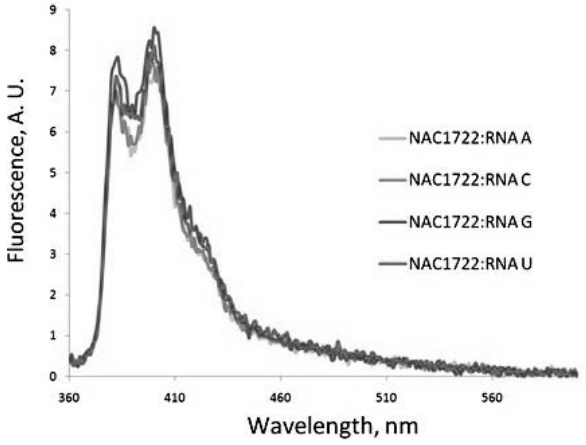
Background: Many traditional drugs function by inhibiting proteins; however, antisense targeting of mRNA holds the prospect of creating therapeutic agents that bind target molecules more specifically and at lower drug doses. This could lead to better therapeutic functioning as well as potentially lowering the unwanted and sometimes seriously harmful side effects caused to patients by traditional drugs. Chemically modified oligonucleotide probes have been shown to induce base flipping and subsequently cause cleavage of RNA, thereby acting as artificial nucleases.

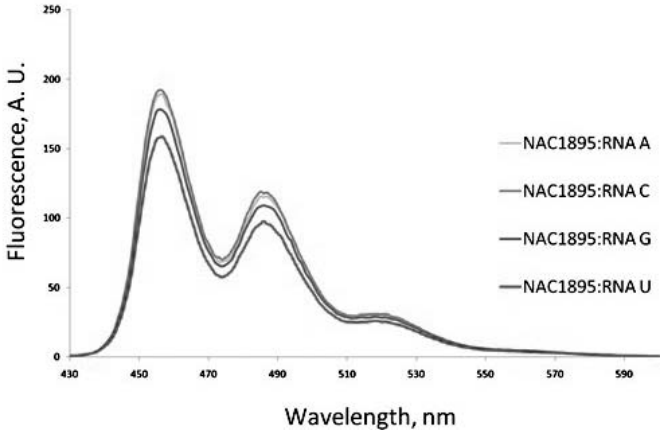
Methods: In this study, 2 novel intercalator-functionalized locked nucleic acids (LNAs) are evaluated as artificial nucleases. Both of these probes contain 1 of the 2 intercalating groups: (1) PyAc-2′-amino-α-L-amino-LNA or (2) PeryMe-2′-amino-α-L-amino-LNA, followed by an abasic site. Thermal denaturation temperatures (Tm values) of duplexes between LNA probes and RNA strands with all 4 nucleotides opposite of the probe's abasic site were measured.

Results: These 4 Tm values vary minimally. Furthermore, fluorescence emission spectra of these duplexes were recorded and found to exhibit virtually identical fluorescence intensities regardless of the ribonucleotide opposite of the abasic site. In concert, these observations strongly support the hypothesis that upon hybridization, the LNA probe induces base flipping in a complementary strand of RNA. Cleavage of RNA target strands was studied using gel electrophoresis. With this method, the research group is looking to identify RNA cleavage exclusively under probing conditions, thus validating both probes as artificial nucleases.

Conclusion: If nuclease activity in these 2 novel intercalator-functionalized LNAs is definitively shown, it may be possible to use them for antisense targeting of mRNA in the future development of second-generation therapeutics.

		3′-r(GAU CA**B** UAU CAU G)			
Oligonucleotide	**Sequence**	A	C	G	U
NAC1895	5′-CTA G**X0** ATA GTA C	27.5	28.0	27.5	29.5
NAC1722	5′-CTA G**Y0** ATA GTA C	27.5	28.5	27.5	28.5





14 A Novel Paradigm in the Clinical Context of Rheumatoid Arthritis: Role of Tfh and Th17 Cells in Autoimmunity

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Background: Rheumatoid arthritis is an autoimmune disease characterized by chronic inflammation that causes progressive joint destruction and reduced quality of life. The Th1/Th2 paradigm is a model for the induction and regulation of immune responses. Th1 cells participate in cell-mediated immunity, whereas Th2 cells support humoral immunity. Recently, Tfh and Th17 cells have emerged as the novel T cell subsets controlling autoimmunity. Identifying their roles may break the Th1/Th2 axis dichotomy, yield new knowledge on rheumatoid arthritis immunopathogenesis, and provide novel therapeutic approaches for patients with rheumatoid arthritis. We examined the frequency of Tfh and Th17 cells in patients with rheumatoid arthritis and investigated their correlation with disease activity, autoantibody levels, and inflammation.

Methods: Peripheral blood was collected from 38 patients with rheumatoid arthritis meeting 2010 American College of Rheumatology/European League Against Rheumatism rheumatoid arthritis classification criteria and age-/sex-matched healthy donors. Patients with rheumatoid arthritis were divided into remission/mild (Disease Activity Score in 28 joints <2.6) and moderate/severe groups (Disease Activity Score in 28 joints >2.6) based on their score. Laboratory values, including rheumatoid factor, anti-cyclic citrullinated peptide (anti-CCP), erythrocyte sedimentation rate, and C-reactive protein were obtained. The frequency of Tfh cells ($CD4^+CXCR5^+ICOS^+$) and Th17 cells ($CD4^+CCR4^+CCR6^+$) were measured by flow cytometry and analyzed by sequential gating. The correlation of circulating Tfh cells and Th17 cells with clinical parameters was statistically determined.

Results: Both circulating Tfh and Th17 cells were significantly increased in moderate/severe patients with rheumatoid arthritis ($P<0.05$). The frequency of circulating Tfh cells correlated with the level of anti-CCP antibody, whereas circulating Th17 cells only correlated with the level of C-reactive protein.

Conclusion: Our data suggest that Tfh and Th17 cells may play different roles in rheumatoid arthritis pathogenesis. Tfh cells may contribute to autoantibody production, while Th17 cells may be involved in the inflammation of rheumatoid arthritis. Thus, disrupting the signals provided by Tfh and Th17 cells may offer new therapeutic strategies for severe patients with rheumatoid arthritis and shift their immune system toward homeostasis.

15 *In Vitro* Synergistic Cellular Proliferation Inhibition in Pancreatic Cancer Cells Su86 and MIA PaCa-2 with Fluvastatin and Nab-Paclitaxel

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Background: Statins have been shown to possess antiproliferative activity *in vitro*. Synergism with multiple drug combinations has been a topic of great interest in pancreatic cancer. We examined 2 *in vitro* cell models for synergism using a combination of fluvastatin and nab-paclitaxel.

Methods: Pancreatic cancer cell lines MIA PaCa-2 (MP2) and Su86 were cultivated and seeded to 25,000 cells/mL and subsequently grown in 96-well plates for 24 hours. The cells were then treated with a fixed concentration of fluvastatin in 9 rows, 8 receiving serial 1:2 dilutions 16 times in triplicate of nab-paclitaxel, 1 fluvastatin-only row, and 1 untreated. Upon dosing, cells were incubated for 72 hours. Cellular proliferation was determined by sulforhodamine B proliferation assays and read at 570 nm. A nab-paclitaxel–only assay was done for comparison. The drug-dose response curves of nab-paclitaxel with fluvastatin were then compared for synergism.

Results: The lowest inhibitory concentrations of fluvastatin in combination with nab-paclitaxel were noted to be between 500-600 micromolar. Fluvastatin alone at these concentrations attenuated cellular proliferation among both MP2 and Su86 cell lines. This indicates a moderate synergism observed when these concentrations have been added to nab-paclitaxel.

Conclusion: Fluvastatin has an *in vitro* antiproliferative effect on Su86 and MP2 cells when treated with monotherapy. Fluvastatin has displayed moderate synergism among both cell lines in combination with nab-paclitaxel. Fluvastatin was shown to be more cytotoxic in Su86 but has a higher degree of synergism with MP2 cell lines. Mouse models are being investigated. A pilot phase 2 randomized controlled trial is being designed to evaluate efficacy of fluvastatin and nab-paclitaxel in patients where gemcitabine/nab-paclitaxel therapy previously failed.

16 A Patient-Derived Orthotopic Model for Esophageal Adenocarcinoma Recapitulates Key Features of Human Tumors and Demonstrates Dependency to Lymph Node Stromal Cells

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Background: Incidences of esophageal adenocarcinoma (EA) have been rising in the Western Hemisphere throughout the past 30 years. The prognosis is poor with a 5-year survival rate of 19% because of lymph node or distant organ metastasis. To understand the role of lymph node metastasis and test novel therapies, it is necessary to develop clinically relevant animal models for EA. We established patient-derived orthotopic xenograft (PDOX) and subcutaneous xenograft models for EA and explored the regulatory role of lymph node stromal cells in EA progress at the cellular, molecular, and *in vivo* levels.

Methods: Twenty-six human specimens from patients with EA were collected and subcutaneously implanted in the flanks of nonobese diabetic/severe combined immunodeficiency mice for generating cancer cells. Luciferase-tagged EA patient cancer cells (EA-PtCC-Luc) were injected subcutaneously in the flanks for the xenograft study and in the esophageal submucosa for the orthotopic study in the absence or presence of human lymph node stromal cells. Tumor progression in subcutaneous xenografts was monitored by tumor size, while in the PDOX model it was measured by luciferase activity. The morphology of tumors from the PDOX and xenograft models was compared to the original tumor in the patients with EA.

Results: Clinical and pathologic profiles of the 26 patients with EA and their *in vivo* tumor growth capacity were compared. Four exhibited consistent tumorigenesis through 4-6 passages with accelerated growth rate and shortened latency. Xenografts maintained similar histological and morphological characteristics after multiple passages. EA-PtCC-Lucs were successfully implanted orthotopically, creating a reproducible and observable PDOX model for EA progression in real time. Significant tumor growth with concurrent metastases was first-time observed in EA patient cancer cells in the presence of lymph node stromal cells.

Conclusion: We developed and characterized a PDOX model for patients with EA that retains the features of primary tumors. This model is tractable and efficient for preclinical evaluation of candidate therapeutic regimens.

17 Assessing the Capacity of Cytotoxic T Cells to Kill Stress-Induced Drug-Resistant Melanoma Cells

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Background: CD8+ T cells, or cytotoxic T lymphocytes (CTLs), are critical for recognizing and directly destroying virally infected and malignant cells. In melanoma, tumor cells can exhibit an early stress-induced drug-tolerant state following short-term drug exposure, hypoxia, or nutrient deprivation. This may enable them to evade CTL-mediated lysis through the upregulation of inhibitory molecules such as PD-L1 or CD271 or through downregulation of differentiation antigens like Melan-A and tyrosinase. However, it is currently unknown whether the loss of melanoma-associated target antigens during the stress response substantially prevents recognition and killing by melanoma-specific CTLs.

Methods: To assess CTL killing in stress-induced melanoma cells, we exposed mouse B16 melanoma cells with docetaxel or hypoxic conditions for 7 days. Next, a fluorescence-activated cell sorting-based killing assay was employed in which mouse B16 melanoma cells were labeled with carboxyfluorescein succinimidyl ester, incubated with tyrosinase-related protein 2 (TRP-2) transgenic mouse CTLs, and then costained with 7-aminoactinomycin D to directly determine tumor lysis by flow cytometry. Currently, we are conducting parallel CTL assays using human melanoma cell lines with healthy CTLs and patient melanoma samples with matched CTLs. To determine the underlying mechanism, we will analyze the surface expression of inhibitory molecules and melanoma-associated target antigens in CD271+ patient melanoma cells. Furthermore, we will correlate patient treatment histories to CD271 expression in patient tumors.

Results: The lysis of murine B16 melanoma cells by TRP-2 transgenic CTLs was reduced from 71.4% lysis of unstressed control to 42.8% and 43.3% lysis under hypoxic conditions or following 5 nM of docetaxel treatment, respectively.

Conclusion: Stressed melanoma cells in mice appear resistant to CTL killing because of reduced surface expression of TRP-2 or the upregulation of inhibitory molecules. To determine clinical relevance, we intend to assess whether drug-resistant states in human melanoma also reduce the capacity of CTLs to kill melanoma.

18 The Role of Cancer Stem Cells in Colorectal Cancer Metastasis

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Background: Cancer stem cells (CSCs) are believed to be pivotal in metastatic spread of colorectal cancer (CRC), causing death in 90% of patients. We previously showed that the number of CRC-CSCs in primary tumors positively correlates to lymph node metastasis, and CRC metastasis is mediated by interaction between CD133+CXCR4+ CRC-CSCs and the lymph node stromal microenvironment. Our goal is to validate CD133 and CXCR4 as CRC-CSC biomarkers *in vivo* as well as to identify additional markers such as CD318 and Ki67.

Methods: CRC-CSC markers (CD133, CXCR4, CD318, and Ki67) were detected by flow cytometry on CRC cell lines and patient cancer cells and by immunohistochemistry staining on paraffin-embedded tissue microarrays (TMA) with primary (n=68) and metastatic (n=23) tumor lesions. Expression levels were quantified by an established digital analysis method using deconvoluting microscopy and Image-Pro software. The CSC biomarker CD318 was targeted by shRNA technique in sphere formation assay and xenograft model.

Results: Flow cytometry showed that CD318 was overexpressed in CD133+CXCR4+ CRC-CSCs in cell lines and patient tumors. CD318-silenced CRC cells formed smaller spheres *in vitro* and smaller tumors in mice. Metastatic tumors showed significantly increased CD133, CXCR4, and Ki67 expression ($P<0.05$). CD318 expression was not increased in metastatic vs primary tumors.

Conclusion: CD318 is coexpressed with other CSC markers and confers sphere formation, making it a likely candidate as another CSC marker. However, its expression was not enriched in metastatic tumors and is therefore less likely to be a significant contributor to CRC metastatic disease. TMA data confirmed CD133 and CXCR4 as CRC-CSC markers and identified Ki67 as a potential additional marker. It is likely that the combination of—rather than individual—expression of biomarkers is important for CSC function. Analysis of additional markers may further elucidate the characteristics of CSCs.

19 Evaluating Tumor Metastases in Patient-Derived Xenograft Models Using Quantitative Real-Time Polymerase Chain Reaction

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Background: Our laboratory is currently pursuing various patient-derived xenografts in mouse models to study the effects of stromal cells on cancer metastasis and therapeutic drug resistance. In these studies, metastatic human cancer cells present after treatment need to be compared and quantified. While methods such as *in vivo* bioluminescent imaging of luciferase-tagged cells are useful, it is difficult to tag all patient tumor cells. In addition, it is necessary to find an even more sensitive quantitative method to compare experimental samples.

Methods: Serial dilutions of HT-29-Luc cells were made to determine the sensitivity of bioluminescent imaging using the In Vivo Imaging System (IVIS). A quantitative real-time polymerase chain reaction (RT-PCR) TaqMan assay was optimized to determine the amount of the human gene for prostaglandin E receptor 2 (PTGER2) in mouse tumors initiated with human cancer cell lines or patient-derived tumor specimens. The sensitivity of the assay was determined by serial dilution of known amounts of human and mouse DNA, and these were used as standard curves for the experimental samples.

Results: The IVIS can detect down to 300 HT-29-Luc cells, while the RT-PCR assay sensitivity was determined to be 100 pg of human DNA (the equivalent of 11 cells) and 6 pg of mouse DNA (the equivalent of 2 cells). The primary tumor and metastatic sites were quantified in a mouse xenograft model of intrarenal subcapsular injection of a renal carcinoma cell line (SN12K1) and found to contain 49.43% (tumor), 0.07% (liver), and 0.35% (lung) human DNA. In patient-derived xenograft models, human DNA was detected in tumors (a colon cancer had 78%) and metastases (a renal carcinoma had 28.9% in tumor, 0.002% in liver).

Conclusion: Our quantitative RT-PCR assay is more sensitive than bioluminescent imaging. It is faster and more quantitative for determining the level of metastasis in cancer patient–derived xenograft models.

20 Understanding the Role of Lymph Node Stromal Microenvironment in Renal Cell Carcinoma Progression

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Background: Renal cell carcinoma incidence is increasing, and incurable metastases affect up to 25% of patients with renal cell carcinoma. Lymph node stromal cells have been shown to enhance tumorigenicity and metastasis in breast and colon cancer models; however, there are currently no models described to examine renal cell carcinoma/lymph node interactions. Our objective is to identify key interactions in human renal cell carcinoma tumor formation and metastasis and characterize their activity using a unique patient-derived orthotopic xenograft (PDOX) model that mimics metastatic renal cell carcinoma.

Methods: Six human renal cell carcinoma cell lines were tagged with luciferase to enable bioluminescent imaging (BLI). Renal cell carcinoma and human umbilical vein endothelial cells were cultured with or without human lymph node stromal cells (HK) using MTT assay to assess cell proliferation. Renal cell carcinoma cells were also seeded at the top and HK cells seeded in the bottom of a migration chamber to observe soluble cellular interactions. For the PDOX model, tumor cells were implanted by subcapsular kidney injection into nonobese diabetic/severe combined immunodeficiency mice with or without HK cells, and tumor growth and metastasis were monitored weekly by BLI. Sections of mouse primary tumor and lung were observed with hematoxylin and eosin stain and immunohistochemistry.

Results: Lymph node stromal cells significantly increase transmigration and proliferation of renal cell carcinoma cell lines. In the PDOX model, HK cells enhanced renal cell carcinoma tumor formation in 3 of 6 cell lines and lung metastases in 4 of 6 cell lines. BLI data of primary tumor and distant organ metastasis were confirmed by immunohistochemistry staining.

Conclusion: The effect of lymph node stromal cells on renal cell carcinoma cells observed *in vitro* suggests that the secretome plays an important role in lymph node/renal cell carcinoma interaction. Renal cell carcinoma cell lines responded differently to HK cells; ie, some were dependent on HK cells for tumor formation and/or metastasis. Thus, individualized therapeutic strategies may benefit patients with renal cell carcinoma, and our PDOX model can be used to identify them.

21 Establishment of a Patient-Derived Orthotopic Xenograft Model for Drugs Targeting Renal Cell Carcinoma Metastasis

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Background: Renal cell carcinoma has a widely varying prognosis, and metastatic renal cell carcinoma is incurable. We previously established an orthotopic xenograft model in which renal cell carcinoma cell lines form primary tumors and metastasize to distant organs in the presence of lymph node stromal cells. Our objective was to establish a patient-derived orthotopic xenograft (PDOX) model for renal cell carcinoma metastasis and treatment.

Methods: Two renal cell carcinoma cell lines (A498-Luc and 769P-Luc) were used to determine the C_{50} of sunitinib and pazopanib using bioluminescent imaging of *in vitro* cell viability at 24, 48, and 72 hours. A freshly resected human renal cell carcinoma specimen (KiCa-Pt58) was obtained, and cells were tagged with luciferase. Various numbers (0.04, 0.2, and 1 million) of these cells were then injected with or without lymph node stromal (HK) cells subcapsularly into the left kidneys of nonobese diabetic/severe combined immunodeficiency mice. Tumor growth was monitored weekly by *in vivo* bioluminescent imaging. Mice bearing kidney tumors were split into treatment and control groups, with treatment groups receiving 10 μL/g (mouse weight) of 1.34×10^{-4} M sunitinib 3 times per week via gavage.

Results: The C_{50} was 6 μM for sunitinib and 3.6 μg/mL for pazopanib. *In vivo* tumor formation was observed in a dose-dependent fashion. Tumor size and metastasis were increased in mice with HK cells in the 0.04 and 0.2 million renal cell carcinoma cell groups. All groups displayed metastasis to the liver but not significantly to the lungs. Mice given drug did not experience any significant weight loss compared with nontreated mice.

Conclusion: Patient tumors successfully produce primary and metastatic tumors in our PDOX model, establishing a useful model for testing new renal cell carcinoma drugs. The gavage technique and dosage of sunitinib were safely delivered without adverse effects, and this technique can likely be used for other drugs as well.

22 Identification of Prognostic Biomarkers for Colorectal Cancer Disease Recurrence

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Background: Tumor-initiating cells are a small subset of stem-like cells within solid tumors that may be involved in tumor recurrence, a major factor in the prognosis of colorectal cancer. Several potential markers have been suggested for identifying these colorectal cancer tumor-initiating cells, including CD133, CD318, CXCR4, and Ki67. We sought to determine whether any or all of these tumor markers are differentially expressed between tumors that cause recurrent disease after curative treatment and those that remain in remission.

Methods: We identified 36 stage 2 patients with colorectal cancer with archived paraffin-embedded primary tumor tissue and matched those patients who developed recurrent disease for age, sex, and comorbidities with those who remained disease free. With these samples, we created tissue microarrays and used immunohistochemistry techniques against the potential tumor-initiating cell markers and CDX2, a cancer marker unrelated to tumor-initiating cells (positive control). The absolute percent staining and the fold difference in staining of individual pairs were determined.

Results: On individual biomarker analysis, patients with recurrent disease showed significantly increased Ki67 positivity (mean fold difference 2.31; 95% CI, 1.15, 3.46; $P<0.05$), while all other biomarkers did not show a significant difference in positive staining. However, combining the 4 tumor-initiating cell biomarkers into a single composite score using the first principal component, the 2 patient groups showed a significantly different profile of staining (mean composite score −1.42; 95% CI, −3.48, 0.65; $P<0.05$).

Conclusion: While Ki67 was more positive in primary tumors that eventually progressed to recurrent disease than in those that didn't, the other markers only showed a pattern between these 2 groups when all 4 markers were combined. These data suggest that tumor-initiating cells may be identified by the combination of various interacting components rather than a single one. Further work is required to identify additional markers that may be used for prognostication and to validate these markers prospectively.

23 Hepatic Stem Cells Are Not Induced by Ischemia/Reperfusion Injury in the Liver

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Background: Hepatic ischemia/reperfusion injury after transplant may be due to donor factors and is a multifactorial event that leads to cell death and can potentially cause a liver transplant to fail. Oval cells (adult hepatic progenitor stem cells) may be activated to regenerate the liver. Ischemia/reperfusion injury has not been investigated as a model for oval cell activation. We used a rat ischemia/reperfusion injury model to determine whether oval cells are induced after a hepatic ischemia/reperfusion injury.

Methods: Six-week-old male Wistar outbred rats were subjected to partial ischemia/reperfusion injury with 30 minutes of ischemia to the left lobe of the liver. Four rats per group were reperfused for 1, 3, 5, and 7 days. Blood and tissue were analyzed for markers of cell death and for oval cells.

Results: Hematoxylin and eosin staining showed the presence of ischemia/reperfusion injury was most pronounced at day 5 of reperfusion. Oval cells were seen around the portal tracts; however, the cells were EdU-negative, indicating that the oval cells were not actively proliferating. Serum alanine transaminase peaked at day 5 of reperfusion. Serum tumor necrosis factor-α levels were stable across all time points. While the oval-shaped cells in the portal tracts were positive for Thy-1 and weakly positive for CK19 in the biliary epithelium, the cells were negative for BD2. Thy-1 and CK19 were also present in normal, nonischemia control rats.

Conclusion: Rats subjected to partial ischemia/reperfusion injury with 30 minutes of ischemia and 1, 3, 5, or 7 days of reperfusion exhibited histological changes that are consistent with tissue damage induced by the injury. While oval cells were detected at low levels, the cells were not actively proliferating and were also seen in negative control animals. Therefore, hepatic ischemia/reperfusion injury is not a model for oval cell induction.

24 Targeting Metastatic Urothelial Carcinoma Using a Patient-Derived Orthotopic Xenograft Murine Model

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Background: Urothelial carcinoma is responsible for more than 150,000 deaths worldwide each year, mainly attributable to metastatic disease. Cancer stem cells are a small subset of malignant cells that may interact with lymph node stromal cells to produce metastases. Our objective was to establish an orthotopic patient-derived xenograft model that has the potential to be used to test drugs that target metastatic urothelial carcinoma.

Methods: Female nonobese diabetic/severe combined immunodeficiency mice were anesthetized using isoflurane and maintained under adequate anesthesia throughout the surgical procedure. The female urethra was cannulized with a 24-gauge catheter. A 0.28 mm pediatric ureteral solid core guidewire was placed through the catheter into the mouse bladder to contact the mucosa. One watt monopolar electrocautery was then applied to the wire for 1 second causing irritation. Premixed luciferase-tagged patient-derived bladder cancer cells (BlCa15Luc) in PBS were then instilled into the mouse bladder through the catheter alone or with lymph node stromal (HK) cells. Mice with HK cells were then given no treatment (control) or treated with conventional intravenous chemotherapy methotrexate, vinblastine, doxorubicin, and cisplatin (MVAC) weekly for 3 weeks. Primary tumors were monitored *in vivo* via bioluminescent imaging. Livers and lungs were imaged at necropsy.

Results: Significant large tumors were formed when BlCa15Luc were coinoculated with HK cells. Treatment with MVAC showed no reduction in mouse body weight. Mice treated with or without conventional chemotherapy MVAC showed less difference in primary tumor growth but a trend toward reduced liver and lung metastases by imaging and immunohistochemistry staining.

Conclusion: We have established an orthotopic model for metastatic urothelial carcinoma. While groups were small in this preliminary study, a trend toward reduction in metastases was observed in the treatment group. This indicates that MVAC may be effective, and the possibility of combination treatment with conventional chemotherapy and cancer stem cells targeted should be explored.

25 Delayed Emergence in Pediatric Patients with Neurologic Disease Presenting for Ambulatory Surgery

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Background: Management of pediatric patients with neurologic diagnoses can be challenging for anesthesiologists. Specialists frequently attest to altered anesthetic awakening, but the evidence is scarce. We sought to determine if preexisting neurologic disease could delay emergence and discharge.

Methods: Following institutional review board approval, we conducted a search of our database from November 2012 to July 2014. Included were patients aged 0-18 years undergoing ambulatory procedures and carrying neurologic diagnoses profoundly affecting development. Patients were excluded if they were admitted, received a total intravenous anesthetic, were not managed with an endotracheal tube, or were extubated deep. A case-control group was also obtained for comparison. The primary outcome was emergence from anesthesia—the time from anesthetic cessation to extubation. Secondary outcomes included the time from extubation to discharge. Descriptive statistics were calculated for demographic data, and outcomes were analyzed for differences using the Student *t* test or Wilcoxon rank sum as appropriate.

Results: Data from 88 patients and an equal number of controls were abstracted. The 2 most common procedures were myringotomies/adenoidectomies and tonsillectomies. Cerebral palsy and trisomy 21 were the predominant coexisting diagnoses. There was no significant difference between study and control groups for weight (18.2 vs 14.1 kg), bleeding (4 vs 5 cc), sex, or intraoperative drug dosages. No significant complications were noted in either group. The study group was significantly older (59 months vs 32 months, $P=0.004$) and sicker (ASA 2.4 vs 1.6, $P<0.0001$) and had longer procedural times (51.8 vs 18.8 minutes, $P<0.0001$). The primary outcome of the time to emergence was longer in the study group (14.6 vs 10 minutes, $P<0.0001$), and the time to discharge was also prolonged (112 vs 83.5 minutes, $P<0.0001$).

Conclusion: In this case-control retrospective study, there was a clinically relevant statistical prolongation of anesthetic emergence and hospital discharge time for pediatric patients with coexisting severe neurologic disease.

26 Evaluation of Ultrasound-Guided Popliteal Sciatic Nerve Blockade in the Severely and Morbidly Obese Populations

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Background: Obesity is a common health problem affecting millions of Americans. Limited research data exist regarding optimal block techniques for this patient population. We compared 2 approaches to sciatic nerve blockade at the popliteal fossa in severely and morbidly obese patients.

Methods: Patients with a body mass index $\geq$35 scheduled for unilateral foot surgery with a popliteal block were randomized to receive an ultrasound-guided popliteal block proximal or distal to the bifurcation of the sciatic nerve. The primary endpoint was visual analog scale scores in the postanesthesia care unit (PACU). Onset of sensorimotor block characteristics, need for conversion to general anesthesia, block procedural times, and narcotic analgesic were secondary outcomes.

Results: Thirty patients were enrolled in each group for a total of 60 subjects. Patients in the distal group had lower visual analog scale scores in the PACU at 1 hour; had faster onset of sensorimotor blockade; and were less likely to require a repeat block procedure, conversion to general anesthesia, or local anesthetic supplementation by the surgical team. There was no difference in block procedure times or incidence of nerve injury between the 2 groups.

Conclusion: In this prospective, randomized, and blinded study, the distal approach to the popliteal block provided a faster onset of surgical sensorimotor blockade and a lower incidence of repeat blockade, of need for local anesthetic supplementation, and of unexpected conversion to general anesthesia. The distal group also had lower visual analog scale scores in the PACU without a difference in procedural times in the severely and morbidly obese population.

27 A Retrospective Study of Local Anesthetic Infiltration Between Popliteal Artery and Posterior Knee Capsule for Managing Knee Pain in Patients Undergoing Primary Unilateral Total Knee Arthroplasty

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Background: Pain management after total knee arthroplasty is often difficult because surgery impacts not only the femoral nerve but also the sciatic nerve. Typically, patients undergo general or neuraxial anesthesia with perioperative femoral nerve block to assist in a less painful recovery. Nevertheless, many patients complain of relentless posterior knee pain. A newer technique involving local anesthetic infiltration between the popliteal artery and posterior knee capsule (iPACK) may provide a great alternative for controlling pain following total knee arthroplasty. Therefore, the objective of this study was to evaluate and compare the effectiveness of iPACK with femoral nerve block vs femoral nerve block alone for attenuation of knee pain, opioid consumption, and improvement in physical therapy performance.

Methods: Retrospective medical record review of patients undergoing primary unilateral total knee arthroplasty at Ochsner Medical Center from September 1, 2014 to December 31, 2014 was conducted after institutional review board approval. Patients in the control group received an ultrasound-guided femoral nerve block with 30 cc of 0.25% ropivacaine followed by a continuous infusion of 5-8 cc/h of 0.2% ropivacaine. The comparison group received 30 cc of 0.25% ropivacaine near the posterior knee capsule in addition to the ultrasound-guided femoral nerve block. Pain scores and opioid consumption were recorded every 8 hours from the block placement ±3 hours for 48 hours. In addition, physical therapy performance was also analyzed for 2 days.

Results: Sixty-one patients were enrolled in the femoral nerve block–only group while 23 patients were in the iPACK/femoral nerve block group. There was no statistically significant difference in patient demographics, pain scores, or physical therapy performance. However, opioid consumption was significantly reduced for the iPACK/femoral nerve block group for the first 48 hours (Table).

Conclusion: A single-shot local anesthetic infiltration near the posterior knee capsule reduces opioid consumption, likely by providing effective supplemental analgesia for total knee arthroplasty when compared to a femoral nerve block–only technique.

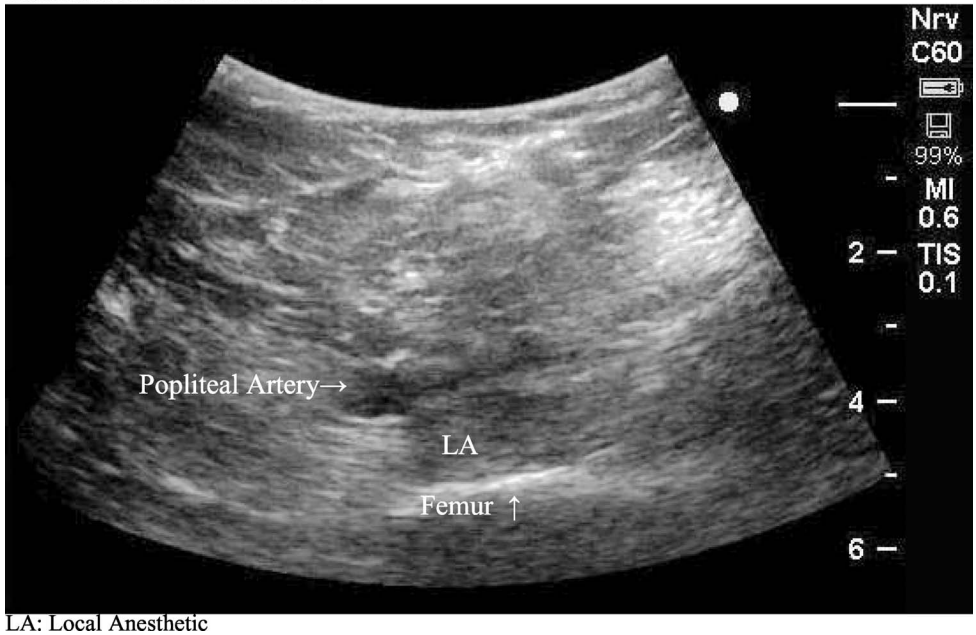
Demographics, VAS Scores, Opioid Consumption, and Distance Traveled in 84 Patients Following Primary Unilateral Total Knee Replacement

Variables	Femoral/iPACK Block N=23	Femoral Block N=61	*P* Value
Demographics			
Age, yrs [IQR]	69 [64-73]	67 [62-72]	0.2564
Gender, female, %	61	62	0.9045
BMI, kg/m^2 [IQR]	32 [29-39]	33 [29-40]	0.6297
ASA PS %			
II	22	38	
III	78	61	0.2945
IV	0	1	
VAS Scores			
PACU, [IQR]	2 [0-2]	1 [0-3]	0.5326
8 hrs, [IQR]	2 [0-5]	2 [0-5]	0.6163
16 hrs, [IQR]	2 [0-5]	2 [0-6]	0.6042
24 hrs, [IQR]	4 [0-7]	3 [1-6]	0.9352
32 hrs, [IQR]	3 [0-6]	3 [0-6]	0.6908
40 hrs, [IQR]	2 [0-6]	3 [0-6]	0.6177
48 hrs, [IQR]	4 [0-6]	4 [2-6]	0.7921
Opioid Consumption			
PACU, [IQR]	15 [15-27]	30 [15-44]	0.0020
8 hrs, [IQR]	19 [15-30]	38 [23-52]	0.0007

16 hrs, [IQR]	30 [15-50]	45 [33-92]	0.0013
24 hrs, [IQR]	45 [30-68]	66 [41-105]	0.0052
32 hrs, [IQR]	57 [45-83]	87 [59-123]	0.0066
40 hrs, [IQR]	75 [45-124]	119 [79-145]	0.0199
48 hrs, [IQR]	93 [72-124]	146 [98-164]	0.0065
Distance Traveled, feet			
POD#1am, [IQR]	4 [1-11]	4 [0-12]	0.8803
POD#1pm, [IQR]	25 [9-35]	20 [2-25]	0.1020
POD#2am, [IQR]	60 [25-80]	60 [18-110]	0.7403
POD#2pm, [IQR]	100 [60-135]	100 [60-150]	0.6714

ACB, adductor canal block; am, morning session; ASA PS, American Society of Anesthesiologists Physical Status Score; BMI, body mass index; iPACK, infiltration between popliteal artery and capsule of knee; IQR, 25-75% interquartile range; PACU, postanesthesia care unit; pm, afternoon session; POD, postoperative day; VAS, visual analog scale.

Ultrasound Guided iPACK Block



LA: Local Anesthetic

28 Ultrasound-Guided Adductor Canal Block in Combination with iPACK Block Improves Physical Therapy Performance and Decreases Hospital Length of Stay in Patients Undergoing Primary Total Knee Arthroplasty

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Background: Pain management after total knee arthroplasty (TKA) is often difficult. Femoral nerve block (FNB) provides effective analgesia but is associated with quadriceps weakness limiting ambulation. Adductor canal block (ACB) provides effective analgesia with less quadriceps muscle weakness. Nevertheless, many patients complain of severe posterior knee pain. A newer technique involving local anesthetic infiltration between the popliteal artery and posterior knee capsule (iPACK) may provide a great alternative for controlling pain following TKA. Therefore, the objective of this study was to compare iPACK block in conjunction with FNB or ACB for analgesia, physical therapy (PT) performance, and length of hospitalization.

Methods: Following IRB approval, a retrospective chart review of 45 consecutive patients undergoing TKA at Ochsner Clinic Foundation from October 24, 2014 to January 8, 2015 was performed. The FNB group received an ultrasound-guided FNB catheter, while the ACB group received an ultrasound-guided adductor canal catheter. Both groups received an initial bolus of 30 mL of 0.25% ropivacaine and an infusion rate of 6-8 cc/hr of 0.2% ropivacaine. Both groups also received an iPACK block with 30 cc of 0.25% ropivacaine. Pain scores and opioid consumption were recorded every 8 hours from the block placement $\pm$3 hours for 48 hours. Physical therapy performance was analyzed for 2 days postoperatively. Time to discharge was also recorded.

Results: A total of 22 patients were enrolled in the ACB/iPACK group, while 23 were in the FNB/iPACK group. No significant differences were noted in demographics or visual analog scale scores. PT performance was significantly better in the ACB/iPACK group. Moreover, hospital length of stay was noticeably shorter in the ACB/iPACK group (Table).

Conclusion: ACB with iPACK improves physical therapy performance, likely by reducing quadriceps weakness, thus allowing earlier hospital discharge.

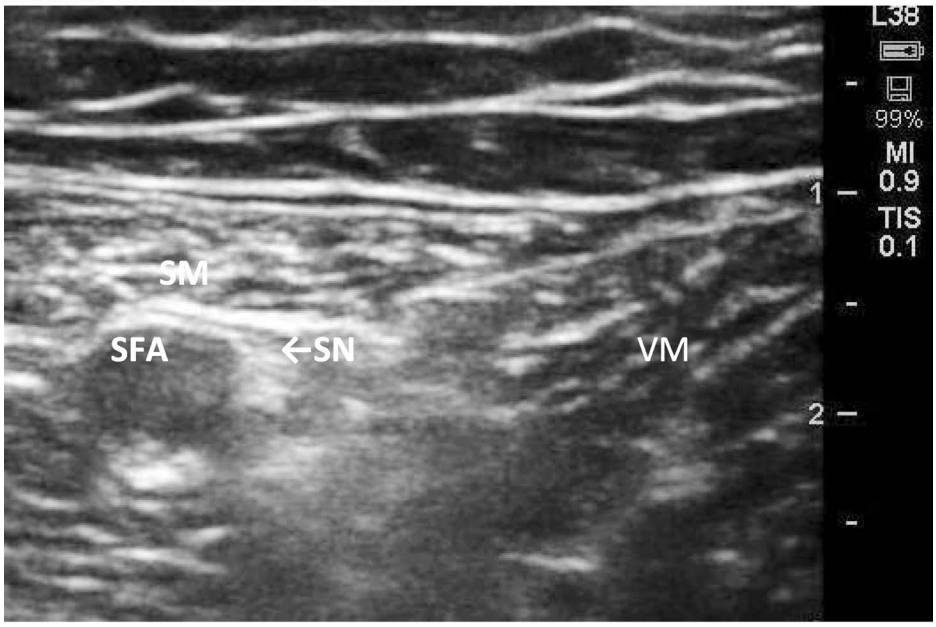
Demographics, VAS, Opioid Consumption, Distance Traveled, and Discharge Day in 45 Consecutive Patients Following Primary Unilateral Total Knee Arthroplasty

Variables	Femoral/iPACK Group N=23	ACB/iPACK Group N=22	P Value
Demographics			
Age, yrs [IQR]	69 [64-73]	63 [60-70]	0.0638
Gender, female, %	60.9	63.6	0.8482
BMI, kg/m^2 [IQR]	32 [29-39]	36 [29-42]	0.9500
ASA PS %			
II	22	41	
III	78	50	0.2462
IV	0	9	
VAS Scores			
PACU, [IQR]	2 [0-2]	2 [2-4]	0.1565
8 hrs, [IQR]	4 [0-6]	4 [0-6]	0.6071
16 hrs, [IQR]	2 [0-5]	3 [0-4]	0.7865
24 hrs, [IQR]	4 [0-7]	3 [0-5]	0.2904
32 hrs, [IQR]	3 [0-6]	2 [0-5]	0.2950
40 hrs, [IQR]	2 [0-6]	4 [0-5]	0.8699
48 hrs, [IQR]	4 [0-6]	4 [0-5]	0.2013
Distance Traveled, feet			
POD#1am, [IQR]	4 [1-11]	14 [6-46]	0.0017
POD#1pm, [IQR]	25 [9-35]	49 [25-109]	0.0015
POD#2am, [IQR]	60 [25-80]	100 [60-150]	0.0159
POD#2pm, [IQR]	100 [60-135]	80 [40-110]	0.2818

Discharge Day			
POD#1, %	0	9	
POD#2, %	31	64	0.0161
POD#3, %	52	27	
POD#4, %	17	0	

ACB, adductor canal block; am, morning session; ASA PS, American Society of Anesthesiologists Physical Status Score; BMI, body mass index; iPACK, infiltration between popliteal artery and capsule of knee; IQR, 25-75% interquartile range; PACU, postanesthesia care unit; pm, afternoon session; POD, postoperative day; VAS, visual analog scale.

Ultrasound Guided Adductor Canal Block



SFA: Superficial Femoral Artery; SN: Saphneous Nerve; VM: Vastus Medialis; SM: Sartorius

29 Reduce Ordering to Reduce Waste—A New Strategy for Blood Ordering in Cardiac Surgical Patients

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30 Presence of Congestive Heart Failure Does Not Predict Significant Carotid Atherosclerosis in Absence of Traditional Risk Factors

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31 Prophylactic Intraaortic Balloon Pump Insertion Prior to Surgical Left Ventricular Assist Device

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Background: Intraaortic balloon pump (IABP) insertion is becoming a common hemodynamic optimization strategy prior to left ventricular assist device (LVAD) implantation. IABP insertion has serious potential complications including bleeding, infection, and vascular complications. We aimed to determine if prophylactic IABP insertion in stable patients with left ventricular systolic dysfunction prior to elective surgical LVAD implantation improved outcomes in LVAD recipients.

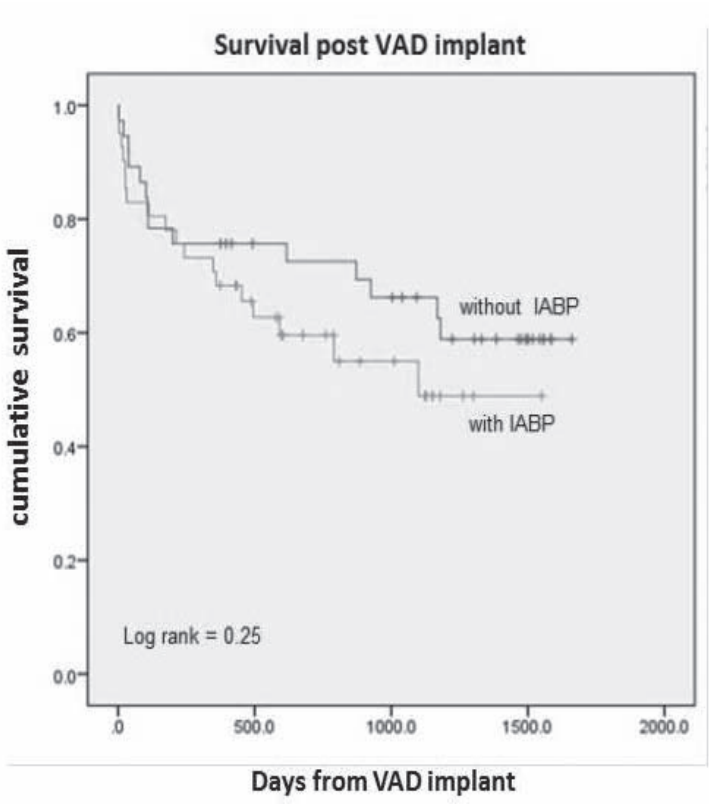
Methods: We performed a chart review of patients who had LVAD implantation at Ochsner Medical Center from 2009-2013. Stable patients undergoing elective LVAD placement with or without prophylactic IABP were included. Patients in cardiogenic shock or on percutaneous left ventricular support were excluded from the study. Baseline demographic characteristics and outcome measures of mortality, length of stay (LOS), and renal function were recorded. Data up to 1 year postimplant were analyzed. Univariate analyses with chi-square and *t* tests were conducted for categorical and continuous variables, respectively. Multivariate logistic and linear regression and Kaplan-Meier survival analyses were also performed.

Results: A total of 94 patients met inclusion criteria. Of these, 53 patients had prophylactic IABP inserted prior to LVAD. Baseline demographic characteristics including age, sex, race, ejection fraction, and Model for End-Stage Liver Disease (MELD) score were similar. Prophylactic IABP placement had no effect on in-hospital, 30-day, and 1-year mortality; ICU and hospital length of stay; postoperative renal function; and duration of postoperative inotrope/vasopressor use (Table).

Conclusion: Prophylactic IABP insertion prior to elective surgical LVAD implantation in hemodynamically stable patients does not improve outcomes.

Table 1		No IABP (n = 41)	IABP (n = 53)	P value
Baseline characteristics				
Age(in years)		53.8 ± 11.4	53.1 ± 12.4	0.78
Gender	male	28(67.6)	36(67.9)	0.97
	female	13(32.4)	17(32.1)	
Race	Caucasian	25(64.9)	32(58.9)	0.56
	Black	16(35.1)	21(41.1)	
LVEF		13.4 ± 4.9	14.4 ± 4.6	0.31
cardiomyopathy	Ischemic	19(46.3)	21(39.6)	0.7
	Nonischemic	22(53.6)	32(61.4)	
Pre op renal failure		9(22)	10(18.9)	0.64
Outcomes				
Post operative renal failure		23(56)	35(66)	0.33
Post-op CRRT		9(22)	12(22.6)	0.42
ICU LOS (days)		10.1 ± 10.8	10.9 ±8.9	0.7
Hospital LOS(days)		37.6 ± 20.1	40.6 ± 21.2	0.48
in -hospital mortality		5(12.2)	7(13.2)	0.56
30 day mortality		3(7.3)	6(11.3)	0.51
1 year mortality		8(19.5)	14(26.4)	0.35
Duration of post of vasopressors (days)		3.6 ± 4.2	4.5 ± 3.04	0.27
Delta CVP		-3.6 ± 4.5	-1.3 ± 5.7	0.04
Delta MAP		0.79 ±11.7	2.2 ±12.7	0.6
Delta PAP		0.88 ± 7.1	3.39 ± 9.9	0.19
Delta PCWP		2.2 ± 6.1	3.2 ± 8.1	0.51
Delta CO		-0.46 ±1.9	-0.68 ± 1.4	0.59
Delta CI		-0.24 ± 0.93	-0.09 ± 0.9	0.47
Delta Hb		2.5 ±1.8	2.8 ± 1.9	0.39
Delta Hct		7.9 ± 4.8	9.1 ± 5.5	0.27
Delta PLT		-93.3 ± 46.1	-105 ±43	0.2

Continuous variables expressed as Mean SD and categorical variables as percentages
Delta-Change in hemodynamic parameters and hemoglobin/ hematocrit /platelet count from baseline to post op Day 1



32 Temporal Trends of Outcomes for Acute Kidney Injury in Acute Ischemic Stroke from 2002 to 2012: An Analysis of Nationwide Inpatient Sample Data

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33 Bivalirudin Use in STEMIs Is Associated with Increased Stent Thrombosis Without Decreasing Bleeding or Death: A Meta-Analysis of Randomized Controlled Trials

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34 Competing Risk of Myocardial Infarction vs Stroke in the Elderly Treated for Hypertension: A Meta-Analysis of Randomized Trials

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35 A Meta-Analysis of Multivessel vs Culprit Artery–Only Percutaneous Coronary Intervention in ST-Segment Elevation Myocardial Infarction

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36 Oral Anticoagulation Continuation vs Heparin Bridging During Cardiac Rhythm Device Procedures: Less Pocket Hematomas—Meta-Analysis of Randomized Trials

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37 Low-Contrast Technique Significantly Reduces Rate of Contrast-Induced Nephropathy

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38 Methylxanthine Derivatives Prevent Contrast-Induced Nephropathy After Coronary Angiography: A Meta-Analysis of Randomized Clinical Trials

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39 Incidence of Cardiovascular Events and Gastrointestinal Bleeds in Patients Receiving Clopidogrel with and without Proton Pump Inhibitors: An Updated Meta-Analysis

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40 Systematic Oral Hydration with Water Is Similar to Parenteral Hydration for Prevention of Contrast-Induced Nephropathy in Patients Undergoing Coronary Angiography or Intervention

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41 Meta-Analysis of Randomized Clinical Trials Comparing Short-Term vs Long-Term Dual Antiplatelet Therapy Following Drug-Eluting Stents

Alexandre M. Benjo, MD, PhD

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42 Trimetazidine Decreases Risk of Contrast-Induced Nephropathy in Chronic Kidney Disease Patients: A Meta-Analysis of Randomized Controlled Trials

Alexandre M. Benjo, MD, PhD;[1] Damodar Kumbala, MD;[2] Fahad Javed, MD;[1] Rajan A. Patel, MD[1,3]

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43 Short-Term Dual Antiplatelet Therapy Following Bare Metal Stent Increases the Risk of Ischemic Events—A Meta-Analysis of Randomized Clinical Trials

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44 Meta-Analysis of Coronary Computed Tomography Angiography vs Standard of Care Strategy for the Evaluation of Low-Risk Chest Pain: Are Randomized Controlled Trials and Cohort Studies Showing the Same Evidence?

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45 Chagas Cardiomyopathy Is Associated with Higher Incidence of Stroke: A Meta-Analysis of Observational Studies

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46 Appropriateness of Telemetry Monitoring in a General Inpatient Setting

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Background: Cardiac telemetry is widely used in hospitals across the United States and the world. However, telemetry may be costly (previously estimated at a minimum of $53/day more than a nontelemetry bed, with an average of $82/day) and may be overused. We assessed the appropriateness of cardiac telemetry use on non–cardiology, non–critical care services at a tertiary care hospital.

Methods: We reviewed the records of 250 consecutive patients admitted to telemetry monitoring beds on non–cardiology, non–critical care services in January 2013. The use of telemetry was graded as appropriate or inappropriate based on the American Heart Association Practice Standards for Electrocardiographic Monitoring in Hospital Settings. We also assessed significant new arrhythmias captured on telemetry, code calls resulting from telemetric monitoring, and clinical decisions made based on telemetry findings.

Results: The mean patient age was 63 $\pm$ 19 years, and 54% were male. Among the total of 1,642 hospital days, 1,401 days (85%) were spent on telemetry. Only 319 (23%) telemetry days were found to be appropriate. During telemetric monitoring, 16 new significant arrhythmias were detected (all on appropriate telemetry days), 4 code calls (all respiratory arrest, 1 [25%] on an inappropriate telemetry day), and 19 significant clinical decisions were made (only 1 [5%] on an inappropriate telemetry day). No code call occurred on a nontelemetry day.

Conclusion: Telemetric monitoring was frequently overused among patients admitted to non–cardiac, non–critical care services at a tertiary care hospital. This overuse may represent an opportunity for significant cost savings.

47 Interventions to Improve Adherence to Lipid-Lowering Medication

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Background: Lipid-lowering drug therapy improves many cardiovascular endpoints. However, optimal patient outcomes are limited by poor patient adherence rates to this therapy. This review assesses the evidence for effectiveness of interventions aimed at improving rates of adherence to lipid-lowering therapies.

Methods: We searched the Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, PsycINFO, and CINAHL and also utilized the results from previous Cochrane reviews of this title. Randomized controlled trials of adherence-enhancing interventions for lipid-lowering medication in adults in an ambulatory setting with a variety of measurable outcomes were evaluated.

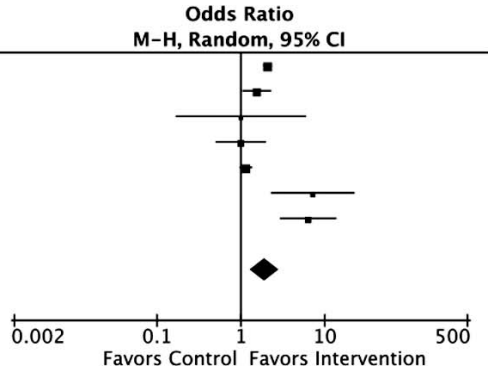
Results: We included 23 studies with a total of 36,105 participants. Given multiple types of interventions and various outcome measures, direct statistical comparisons between many of the interventions were not possible. However, one group of interventions categorized as intensification of patient care was compared to usual care in 7 studies and allowed for comparisons based on similar outcome measures. This group of studies included 11,204 individuals and compared adherence rates over a short-term period ($\leq$6 months). Those in the intervention group showed significant improvement in adherence rates when compared to usual care (odds ratio [OR], 1.93; 95% confidence interval [CI], 1.29-2.88; Figure). A separate, similar analysis of 2 studies involving 422 individuals also showed improvements in long-term ($>$6 months) adherence rates using these types of interventions (OR, 2.48; 95% CI, 1.51-4.09).

Conclusion: Healthcare systems that can implement team-based intensification of patient care interventions such as electronic reminders, pharmacist-led interventions, and healthcare professional education of patients may be successful in improving patient adherence rates to lipid-lowering medicines.

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Odds Ratio M-H, Random, 95% CI
Derose 2012	1102	2606	679	2610	22.0%	2.08 [1.85, 2.34]
Eussen 2010	392	439	388	460	18.5%	1.55 [1.04, 2.29]
Faulkner 2000	12	15	12	15	4.2%	1.00 [0.17, 5.98]
Goswami 2013	111	155	38	53	13.5%	1.00 [0.50, 1.99]
Guthrie 2001	2897	3635	707	913	21.5%	1.14 [0.96, 1.36]
Marquez 2004	52	56	38	59	8.0%	7.18 [2.28, 22.65]
Marquez 2007	86	96	53	92	12.3%	6.33 [2.92, 13.73]
Total (95% CI)		**7002**		**4202**	**100.0%**	**1.93 [1.29, 2.88]**
Total events	4652		1915			

Heterogeneity: $Tau^2 = 0.19$; $Chi^2 = 50.97$, df = 6 ($P < 0.00001$); $I^2 = 88\%$

Test for overall effect: $Z = 3.18$ ($P = 0.001$)



48 CT Radiation Dose for Cardiac Structure and Morphology

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Background: The aim of this study was to demonstrate the difference in radiation dose between two cardiac computed tomography angiogram (CTA) modalities.

Methods: The dose report for cardiac CTAs in 8 consecutive patients referred for pulmonary vein isolation (Group 1) was compared to the same number of patients with a clinical indication for a coronary CTA using a prospective gating protocol (Group 2). All patients were imaged on a GE 64-slice VCT multidetector scanner.

Results: Patients in Group 1 were slightly older and had higher weights and BMIs than those in Group 2. This is reflective of the average patient referred for pulmonary vein isolation. The mean radiation dose reported as the dose-length product (DLP) to patients was much higher in Group 1, measuring 672.75 mGray-cm vs 226.29 mGray-cm in Group 2. Using a tissue factor of 0.014, this translates to 9.4 mSieverts vs 3.7 mSieverts, respectively.

Conclusion: Cardiac CTAs are commonly performed for structure and morphology prior to interventions in the electrophysiology and catheterization laboratories. The current protocol does not employ ECG gating and is less time consuming than coronary CTAs. ECG gating is often retrospective and increases the dose to the patient. However, using prospective gating along with other commonly utilized techniques for dose reduction has significantly reduced the dose to the patient while retaining image quality. This allows for radiation levels to be low enough for CTA to be considered safe for young adults. Cardiac CTAs for cardiac structure and morphology should be performed using prospective gating to reduce the radiation dose to the patient.

Patient Demographics and Radiation Dose

Group1	60.6 yrs	98.6 kg	30.7 (BMI)	672.75 mGray-cm
Group 2	57.1 yrs	72.8 kg	28.6 (BMI)	226.29 mGray-cm

49 Effects of Gender, Body Mass Index, and Brassiere Cup Size on Single Photon Emission Computed Tomography Myocardial Perfusion Imaging

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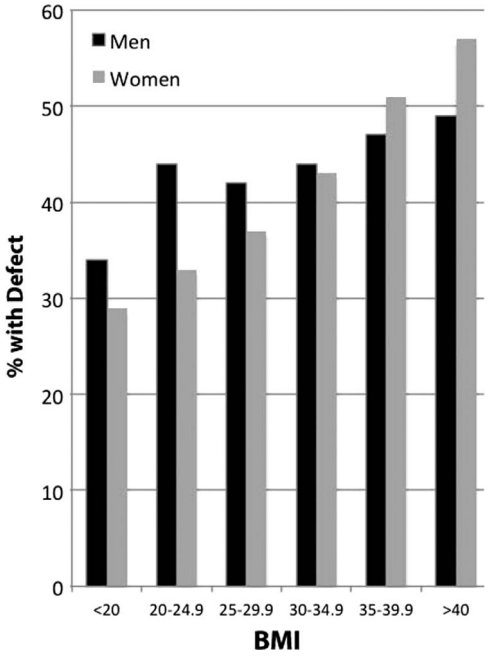
Background: The impact of body mass index (BMI), gender, and brassiere cup size on single photon emission computed tomography myocardial perfusion imaging (SPECT-MPI) has not been fully elucidated. We investigated the prevalence of defects on SPECT-MPI given those specific characteristics.

Methods: In a multihospital health system, 27,980 patients underwent clinically indicated SPECT-MPI. We evaluated the prevalence of SPECT defects stratified by gender, BMI (grouped in 5 kg/m^2 increments), and brasserie cup size.

Results: Among the entire population (53% male, BMI 31 $\pm$ 7 kg/m^2), 11,988 (43%) showed a SPECT defect. Males had a slightly higher prevalence of defects than females (44% vs 42%, P=0.006). Increasing BMI was associated with a higher defect prevalence (for BMI $<$20 kg/m^2, 31%; 20-24.9 kg/m^2, 38%; 25-29.9 kg/m^2, 40%; 30-34.9 kg/m^2, 44%; 35-39.9 kg/m^2, 49%; and $\geq$40 kg/m^2, 54%; $P<0.000001$). Defect prevalence was more strongly related to BMI for females than for males (females 29%, 33%, 37%, 43%, 51%, 57%, respectively; males 34%, 44%, 42%, 44%, 47%, 49%, respectively; interaction term for BMI*gender pD 44%; $P<0.000001$). There was a weak but statistically significant correlation between BMI and brassiere cup size (R2=0.18; $P<0.000001$).

Conclusion: The prevalence of defect on SPECT-MPI correlates more with BMI in females than in males. SPECT defects are more prevalent among females with larger brassiere cup size.



50 Race and Willingness to Participate in Cardiovascular Research

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Background: African American (AA) patients are underrepresented in clinical trials in the United States for a variety of reasons. We examined the cardiovascular research data of a large community academic center in New Orleans, LA, to determine whether race was associated with participation in cardiovascular research.

Methods: We used a nested case control design. Individuals could be included if they were offered participation in any of the 4 largest studies conducted in 2012, were white or AA, and were American citizens (n=974). Median household income was inferred using postal codes. Cases were defined as individuals who declined to participate and did not sign a consent form. Controls were defined as individuals who agreed to participate and signed the consent form.

Results: We identified 100 cases and selected 200 controls matched on age (within 1 year) and sex using a random selection algorithm. Of the 974 patients eligible for analysis, mean age (SD) was 65 (14) years, median household income in thousands was 51.92 (19.9), and 65.3% were men. Of those who agreed to participate, 32.2% were AA, while of those who refused, 31.0% were AA. The unadjusted Mantel-Haenszel odds ratio for participation by race was 1.06 (95% confidence interval [CI], 0.60-1.94) for AA individuals compared to their white age- and sex-matched counterparts. Using multivariable conditional logistic regression, the odds ratio for participation in a study was 1.04 (95% CI, 0.56-1.92) for AA patients compared to their white age- and sex-matched counterparts after adjustment for median household income, employment, and marital status.

Conclusion: Our findings suggest that at a large community academic center, race does not significantly affect willingness to participate in cardiovascular research independent of age, sex, socioeconomic status, and marital status.

51 Incidence and Predictors of Delayed Permanent Pacemaker Implantation After Surgical Aortic Valve Replacement

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Background: Atrioventricular (AV) block requiring permanent pacemaker implantation (PPM) is a well-described complication of surgical aortic valve replacement (SAVR). The risk of delayed PPM (defined as PPM after the primary hospitalization but within 1 year of SAVR) has not been characterized. We sought to determine the incidence and identify clinical predictors of delayed PPM following SAVR.

Methods: We analyzed 488 patients (68 $\pm$ 13 years, 61% male) who underwent SAVR at our institution between June 1, 2004 and July 1, 2013. Patients with prior PPM and patients with less than 1 year of postoperative follow-up were excluded. Baseline clinical characteristics along with preoperative and postoperative electrocardiogram parameters were evaluated.

Results: A total of 20 patients (4.1%) underwent delayed PPM following SAVR. Complete heart block or high-grade AV block was the indication for delayed PPM in 9 (45%) of these patients. Baseline bundle branch block was more prevalent in those who received delayed PPM than in patients who did not receive PPM (55% vs 8%; $P<0.001$). Using chi-square analysis, development of new postoperative left bundle branch block (LBBB) and new-onset postoperative atrial fibrillation were both found to be predictors of delayed PPM (15% vs 5%, $P<0.001$ and 55% vs 23%, $P<0.001$, respectively).

Conclusion: SAVR is associated with a low but quantifiable risk of PPM occurring up to 1 year after the index admission for surgery. Development of high-grade or complete AV block not present at time of discharge is the most common indication. Presence of preoperative bundle branch block, postoperative new-onset atrial fibrillation, and postoperative new LBBB are all associated with delayed PPM. Closer outpatient follow-up may be needed in these patients to monitor for development of significant conduction system disease.

52 Level of Appropriate Use of Transesophageal Echocardiography and Its Clinical and Financial Impact

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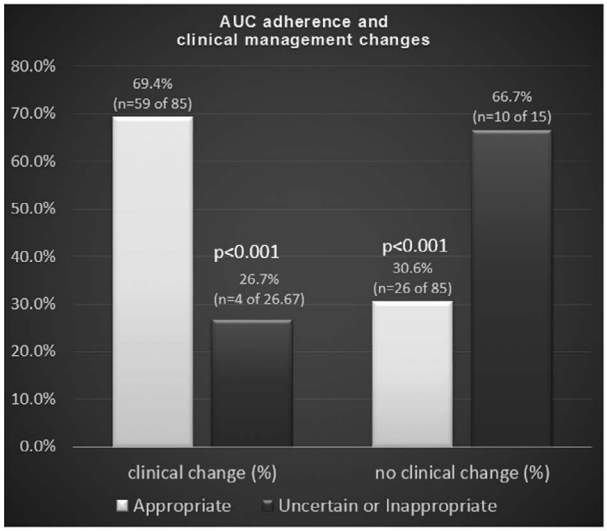
Background: Transesophageal echocardiography (TEE) is an important tool for guiding appropriate cardiovascular disease management. With recent implementation of the appropriate use criteria, little is known about how frequently these criteria are followed and their impact on clinical management. We also sought to estimate the financial burden of unneeded TEEs.

Methods: A retrospective analysis of 100 consecutive inpatient TEEs was compiled to determine the frequency of appropriate use by each appropriate use criterion. In addition, the utility of the TEEs in altering the management of patients was explored.

Results: Of 100 cases reviewed, 85% (n=86) of TEEs ordered were appropriate, 5% (n=5) were uncertain, and 10% (n=10) were inappropriately ordered. Sixty-nine percent (n=59 of 86) of appropriate TEEs vs 26% (n=4 of 15) of inappropriately ordered TEEs led to clinical management change (*P*=0.008). No management change was seen in 30.6% (n=26) of appropriate tests vs 66.7% (n=10 of 15) of inappropriately ordered tests (*P*=0.008). Of appropriately ordered TEEs that led to a change in management, 20.0% (n=17 of 85) of patients had medication or duration of therapy changed, 3.5% (n=3 of 85) resulted in a surgical consultation, 37.6% (n=32 of 85) had invasive procedures planned or performed, and 8.2% (n=7) led to a cancellation of a previously planned invasive procedure. The 15% inappropriate or uncertain tests that were ordered and that led to no change in clinical management had a calculated total annual unneeded TEE cost of $257,349 (Figure).

Conclusion: Following appropriate use criteria guidelines for TEEs is useful for clinical decisionmaking and therapeutic management. Improving adherence to such standards can augment the quality of patient care, reduce excess medical cost, and prevent unnecessary procedural risks by decreasing the number of studies that are not appropriate.



a.

	Cost in $US
Cost per TEE	$3,231
No. of TEE orders AUC 1-6 that lead to no change in management	15
Total cost for inappropriate or uncertain TEEs with no clinical change	$48,465
Total cost of appropriate TEEs with no clinical change	$84,006
Total cost of all TEEs ordered with no resulting change in clinical management	$132,471
No. of total inpatient TEEs in 2013	531
Projected total TEE cost in 2013	$1,715,661
Likely "unneeded" TEE cost (15% of total TEE cost)	$257,349

b.

53 Predictors of Outcomes with Catheter-Based Therapy for Acute Stroke

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Background: Timely reperfusion directly impacts favorable neurologic outcomes in patients with acute ischemic stroke. Catheter-based therapy for reperfusion has been successful when timely intravenous tissue plasminogen activator is not possible, but variables that predict good neurologic outcomes are unknown.

Methods: This retrospective study included 124 consecutive acute ischemic stroke patients who received catheter-based therapy at Ochsner Medical Center from 2006-2012. The primary outcome was a modified Rankin Score (mRS) of $\leq$2 at 90 days post–catheter-based therapy (good outcome). Other data included all-cause mortality during index hospitalization, at $\leq$30 days, and at 1 year; procedure-related complications; and revascularization success defined as Thrombolysis in Cerebral Infarction (TICI) $\geq$2 flow. Data are reported as cohorts treated by interventional cardiologists or by neurointerventionalists.

Results: The mean National Institutes of Health Stroke Scale score was 15.0 $\pm$ 7.5, the middle cerebral artery was the culprit lesion in 78% of patients, and 80% (n=100) had TICI $\geq$2 flow. Index hospitalization mortality was 25%, at $\leq$30 days it was 26%, and at 1 year it was 32%. Sixty-four percent (n=37) of patients $\leq$65 years had mRS $\leq$2 vs 36% (n=24) of patients >65 years (*P*=0.002), and 30-day mortality was 21% (n=12) vs 50% (n=33) (*P*=<0.001), respectively. No difference in primary outcome or mortality was seen between interventional cardiologists (n=58) or neurointerventionalists (n=66) or between patients who received percutaneous transluminal angioplasty and/or stents vs patients who received thrombectomy (Figure).

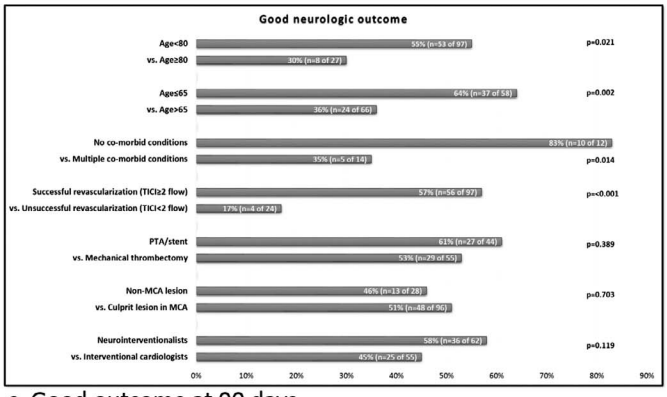
Conclusion: Successful catheter-based therapy leads to a good neurologic outcome in selected stroke patients. The device used did not impact outcome. Patients >65 years and/or with more stroke risk factors had poor outcomes despite successful recanalization. In support of broadening the number of physicians who can provide acute stroke care, there was no outcome difference in patients treated by interventional cardiologists compared to neurointerventionalists.

	All patients, $n=124$	Interventional cardiology, $n=58$	Neuro-interventional, $n=66$	*P* value
Age	65 ± 16	64 ± 15	66 ± 16	0.66
Sex (% m)	47	48	47	0.88
Patients with diabetes, hypertension, hyperlipidemia, previous TIA/CVA *n* (%)	14 (11%)	10 (17%)	4 (6%)	<0.05
Patients with no co-morbid conditions *n* (%)	12 (10%)	2 (3%)	10 (15%)	0.83
Mean NIHSS	15.0 ± 7.5	14.9 ± 7.9	15.1 ± 7.3	0.91
Mean mRS at presentation	2.8 ± 2.8	2.8 ± 1.75	2.7 ± 1.77	0.70
Patients who received IV tPA prior to CBT	15 (12%)	3 (0.05%)	12 (18%)	0.026
Door to balloon time (hr:min)	4:17 ± 4 hr	4:13 ± 4 hr	3:58 ± 4 hr	0.372
Mechanical thrombectomy	55 (62%)	5 (9%)	50 (86%)	<0.001
Balloon PTA/stent alone	44 (35%)	35 (60%)	9 (14%)	<0.001
Both mechanical thrombectomy and balloon PTA/stent	25 (20%)	18 (31%)	7 (6%)	<0.005
Restoration of TICI ≥ 2 flow	100 (81%)	45 (78%)	55 (83%)	0.418

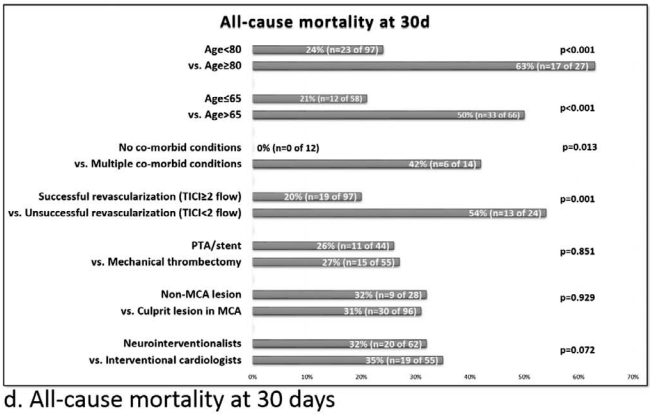
a. Demographics

	All Pts. n (%)	NI n (%)	IC n (%)	*P* value
Any ICH by CT or MRI during index hospitalization	29 (23.4%)	18 (27.2%)	11 (19.0%)	0.276
Major complications	4 (3.2%)	3 (4.5%)	1 (1.7%)	0.375
Minor complications	3 (2.4%)	3 (4.5%)	0 (0%)	0.021
All complications including ICH	36 (29.0%)	24 (36.3%)	12 (20.7%)	0.055

b. Complications



c. Good outcome at 90 days



d. All-cause mortality at 30 days

54 Correlation Between SHIM Score and Absolute Coronary Flow as Identified by Cardiac PET Scan

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Background: While correlations between coronary artery disease and vascular-induced erectile dysfunction have been described, it is uncertain whether nonvascular erectile dysfunction is a predictor of coronary artery disease. Myocardial perfusion positron emission tomography (PET) is a noninvasive method of assessing absolute coronary blood flow and allows quantitation of a full spectrum of vascular dysfunction. If nonvascular erectile dysfunction is a correlate of subclinical coronary artery disease, it could allow for early intervention and treatment of coronary artery disease, the number one cause of mortality in the United States. We hypothesize that males with erectile dysfunction of nonvascular etiology will have a higher prevalence of coronary artery disease and that there is an inverse relationship between levels of erectile dysfunction as measured by the Sexual Health Inventory for Men (SHIM) and the degree of coronary artery disease on PET as measured by coronary blood flow.

Methods: An exploratory analysis was performed to assess the correlation between SHIM score and coronary blood flow based on PET scan. All participants answered the SHIM questionnaire with scores $\leq$11 being severe and $>$12 being mild-moderate. Information regarding medical history, cardiovascular risk factors, and a physical exam were obtained. All participants underwent PET imaging with a calculation of coronary blood flow.

Results: Nine patients completed the study, 5 with severe SHIM scores and 4 with mild-moderate scores. All patients, regardless of the SHIM score, had normal resting, stress, and whole coronary reserves. Perfusion imaging was normal among all patients with the exception of 1 diabetic patient who had flow heterogeneity.

Conclusion: Based on the small and limited sample size, there does not appear to be a relationship between SHIM scores and coronary flow reserves. However, this could be mitigated by a small sample size or screening an inappropriate subset of patients.

55 Correlation Between B-Type Natriuretic Peptide Levels and Pulmonary Capillary Wedge Pressure in Patients Supported with Continuous-Flow Left Ventricular Assist Devices

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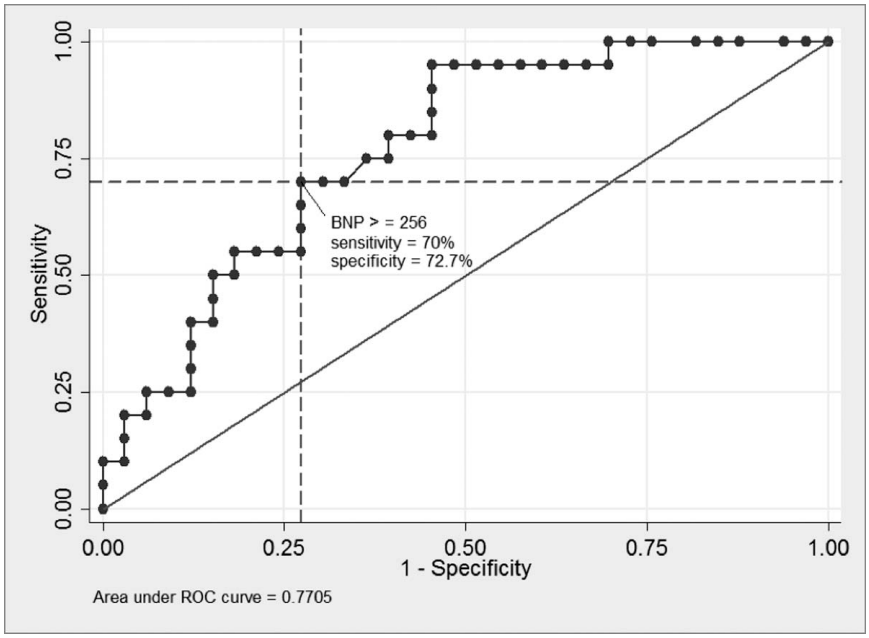
Background: B-type natriuretic peptide (BNP) may be a useful diagnostic tool in the detection and treatment of postimplant residual heart failure (HF) in patients with continuous-flow left ventricular assist devices (LVADs). Whether BNP retains its association with increased left ventricular (LV) filling pressures (pulmonary capillary wedge pressure [PCWP] >15 mmHg) in LVAD patients, however, remains unknown.

Methods: Fifty-two consecutive ambulatory LVAD patients who underwent simultaneous right heart catheterization and BNP measurements were enrolled in our study.

Results: In general, BNP levels were elevated (BNP median=223, interquartile range [IQR], 145-434) and modestly correlated with PCWP (r=0.46, p 30; r=0.51, *P*=0.004) and with preserved renal function (GFR >60; r=0.61, *P*=0.001). BNP >256 had a good accuracy to detect PCWP >15 mmHg (sensitivity=70%, specificity=72.7%, area under the curve=0.77).

Conclusion: Our results suggest that a mild elevation of BNP levels (100-200 pg/mL) is not a reliable marker of vascular congestion in LVAD patients. BNP >256 had a good accuracy to detect PCWP >15 mmHg and was proposed as an optimal cutoff to detect elevated LV filling pressures.



56 Evaluation of Orthostatic Blood Pressure Measurements in VAD Patients: Nonischemic vs Ischemic Cardiomyopathy

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Background: Anecdotally, complaints consistent with orthostatic hypotension were more common among ventricular assist device (VAD) patients with nonischemic cardiomyopathy (NICMP). Patients with NICMP are at higher risk of right ventricular dysfunction postimplant compared to those with ischemic cardiomyopathy (ICMP), which may predispose patients to greater positional blood pressure changes. We present data evaluating orthostatic blood pressures in LVAD patients, comparing NIMCP to ICMP patients.

Methods: Data from consecutive patients were obtained during routine clinic visits. Mean arterial blood pressure (Doppler) was defined as controlled $\leq$80 mmHg and uncontrolled $>$80 mmHg. Orthostatic hypotension, from a supine to a standing position, was defined as a decline of $\geq$5 mmHg (equal to a decline in systolic blood pressure of $\geq$15 mmHg).

Results: A total of 50 patients with a mean age of 55 $\pm$ 3 years and duration of support of 460 $\pm$ 434 days were evaluated. Sixty-two percent (n=31) were NICMP in etiology. Mean arterial pressure was similar between the two groups: 86 $\pm$ 2 vs 87 $\pm$ 2 mmHg (NICMP vs ICMP, respectively). The NICMP group had a trend toward a greater decline in mean arterial pressure upon standing (–3 vs –1 mmHg, P=0.30) and were more likely to complain of symptoms (83%). Of the NICMP patients, 31% had a decline in mean arterial pressure defined as orthostatic compared to 16% of the ICMP patients. Of the 6 patients who had symptoms of orthostatic hypotension and a decline of $\geq$5 mmHg, 83% (5) were NICMP, with a mean change in mean arterial pressure of –7 mmHg. Overall, only 48% of patients had controlled blood pressure (32% NICMP vs 16% ICMP) and were on a similar number of antihypertensive medications.

Conclusion: NICMP patients had a trend toward a greater decline in mean arterial pressure upon standing, were more likely to complain of symptoms, and were less likely to have preserved right ventricular function postimplant. Our data suggest that in VAD patients, orthostatic hypotension should be defined as symptoms plus a decline in mean arterial pressure of $\geq$7 mmHg and that abnormal right ventricular function may lead to a predisposition to orthostatic hypotension in VAD patients.

57 Clinical Profiles and Outcomes of Cardiac Transplant Recipients Using AlloMap and Cylex ImmuKnow Assays

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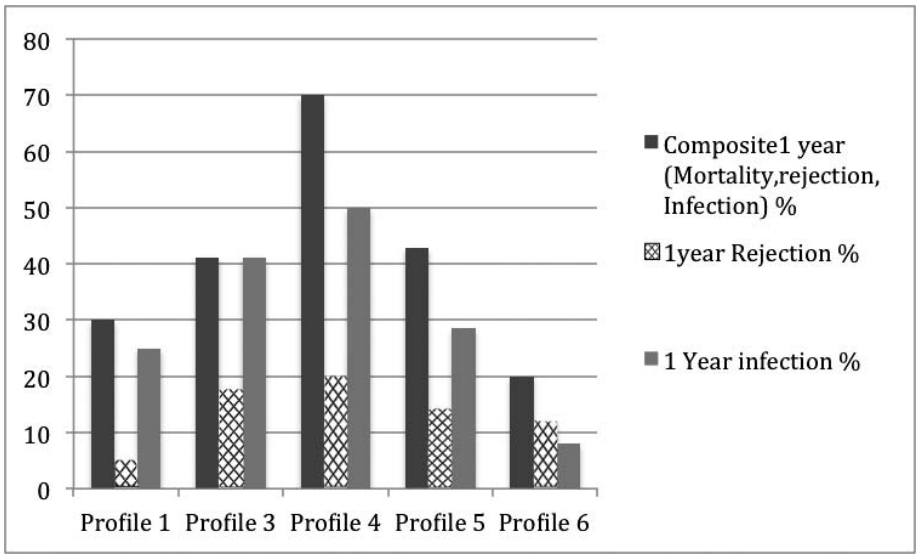
Background: This study aimed to determine if clinical profiles based on AlloMap scores and Cylex can predict 1-year clinical outcomes (allograft rejection and infection) in patients with heart transplantation.

Methods: We studied AlloMap scores and Cylex measured at 6 months post cardiac transplantation from 80 consecutive patients from a single heart transplant center. Clinical profiles were defined based on AlloMap scores and Cylex: Profile 1, AlloMap <34/Cylex 226-524; Profile 2, AlloMap <34/Cylex <225; Profile 3, AlloMap <34/Cylex >525; Profile 4, AlloMap >34/Cylex 226-524; Profile 5, AlloMap >34/Cylex <225; Profile 6, AlloMap >34/Cylex >525. Clinical outcomes included composite of acute cellular or antibody-mediated rejection and infection at 1 year posttransplant.

Results: In the total cohort, mean age was 52 ±12 years, and 61% were males. The following clinical profiles were identified: Profile 1 (46%); Profile 2 (25%); Profile 3 (9%); Profile 4 (10%); Profile 5 (9%), and Profile 6 (1%). Patients with Profile 5 (AlloMap >34/Cylex <225) were more likely to reach the clinical endpoint of composite of acute cellular- or antibody-mediated rejection and infection at 1 year posttransplant compared to patients with Profile 4 (AlloMap >34/Cylex 226-524) (57.1% vs 12.5%, respectively). Allograft rejection and infection were more common in cardiac transplant recipients with Profiles 2 and 5. Interestingly, cardiac transplant recipients with Profile 4 (AlloMap >34/Cylex 226-524) had the lowest rates of rejection and infection (0% and 12.5%, respectively).

Conclusion: The utilization of clinical profiles defined by AlloMap scores and Cylex may be useful in predicting the clinical outcomes of allograft rejection and infection at 1 year posttransplant.



58 Blood Pressure Profiles and Left Ventricular Assist Devices: Effects of Ventricular-Vascular Uncoupling

Patrick Campbell, MD;[1,2] Selim Krim, MD;[1,2] Sapna Desai, MD;[1] Stacy Mandras, MD;[1] Hamang Patel, MD;[1] Clement Eiswirth, MD;[1] Hector Ventura, MD[1,2]

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Background: Blood pressure management in patients with left ventricular assist devices (LVADs) remains enigmatic. Accordingly, we sought to describe blood pressure profiles and factors determining blood pressure variability in stable LVAD patients.

Methods: Ambulatory LVAD patients were evaluated by oscillometric cuff and arterial Doppler to measure blood pressure. Controlled blood pressure was defined as mean arterial pressure $\leq$80 mmHg, and uncontrolled blood pressure was defined as $>$80 mmHg. Orthostatic hypotension was defined as $\geq$-5 mmHg (equivalent to a 15 mmHg decline in systolic blood pressure).

Results: Fifty consecutive patients were included, of whom 26% (n=13) were controlled. No significant differences in baseline demographics and medical history were found between the 2 groups. There was no significant difference between the 2 groups in the number of blood pressure medications prescribed (2.4 in the controlled group vs 2.9 in the uncontrolled group, P=0.13). Uncontrolled patients had a significantly higher pulsatility index (PI) (5.7 vs 4.7, P=0.02) and were more likely to have preserved right ventricular function postimplant (57% vs 38%, P=0.05). Mean arterial pressure was higher in all three positions in the uncontrolled population, and there was a trend toward greater decline in mean arterial pressure (supine to standing) in the controlled group (–3 vs –1.4 mmHg, P=0.30). Cuff pressure (P=0.008) and calculated mean arterial pressure (P=0.006) were higher in the uncontrolled group, and there was a trend toward higher prevalence of a palpable pulse in the uncontrolled group (P=0.07).

Conclusion: Blood pressure control was suboptimal in this cohort by current guidelines. Furthermore, orthostatic hypotension should be defined as symptoms plus a decline in mean arterial pressure of $\geq$5 mmHg. However, 83% of the symptomatic orthostasis patients experienced a decline of $\geq$7 mmHg, suggesting a new threshold for defining this entity. In the presence of a palpable pulse (a higher PI as its surrogate), arterial Doppler overestimates actual blood pressure, resulting in potential misclassification of adequacy of blood pressure control.

59 Effect of Measurement Method on the T-peak to T-end Interval's Ability to Risk-Stratify for Ventricular Tachyarrhythmia and Mortality

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Background: Evidence continues to accumulate in multiple patient populations showing that a prolonged heart rate-corrected T-peak to T-end interval (Tpe_c) implies increased risk for ventricular tachyarrhythmia (VT/VF) and mortality. In published studies, Tpe has been measured using various methods. Prior to Tpe_c becoming clinically useful, the measurement method needs to be standardized. The optimal measurement method is unknown.

Methods: We prospectively evaluated 327 patients with left ventricular ejection fraction $\leq$35% and an implantable cardioverter-defibrillator. Baseline Tpe was measured using several methods described in the literature: the manual "tangent" method in leads V2, V5, II; average V1-V6; average V4-V6; maximum of V1-V6; maximum of any lead; and the automated GE Healthcare program 12SL. Measurements were corrected for heart rate by the Bazett formula. Follow-up for the endpoints of VT/VF and death were performed using device clinic follow-up, Social Security Death Index, and medical record review. We compared the utility of each Tpe_c measurement method for prediction of each endpoint. To account for differences in the magnitude of measurements, the results are expressed in standard deviation increments.

Results: During 30 $\pm$ 23 months, 93 (28%) patients had VT/VF, and during 50 $\pm$ 21 months, 99 (30%) patients died. Tpe_c measurements predictive of VT/VF were V2, II, maximum of any lead, and 12SL (heart rate per SD: 1.26, 1.29, 1.21, and 1.47, respectively; all $P<0.05$). All methods predicted death (heart rate 1.24-1.41; all $P<0.05$).

Conclusion: The predictive utility of Tpe_c for ventricular tachyarrhythmia depends on the method of measurement. For the prediction of mortality, all published Tpe measurement methods are predictive. As evidenced by the magnitude of hazard ratios, for both endpoints, automated measurement using the 12SL program results in the greatest differentiation between high- and low-risk patients.

60 Positron Emission Tomography Stress Myocardial Blood Flow Predicts Ventricular Tachyarrhythmia in Patients with an Implantable Cardioverter-Defibrillator

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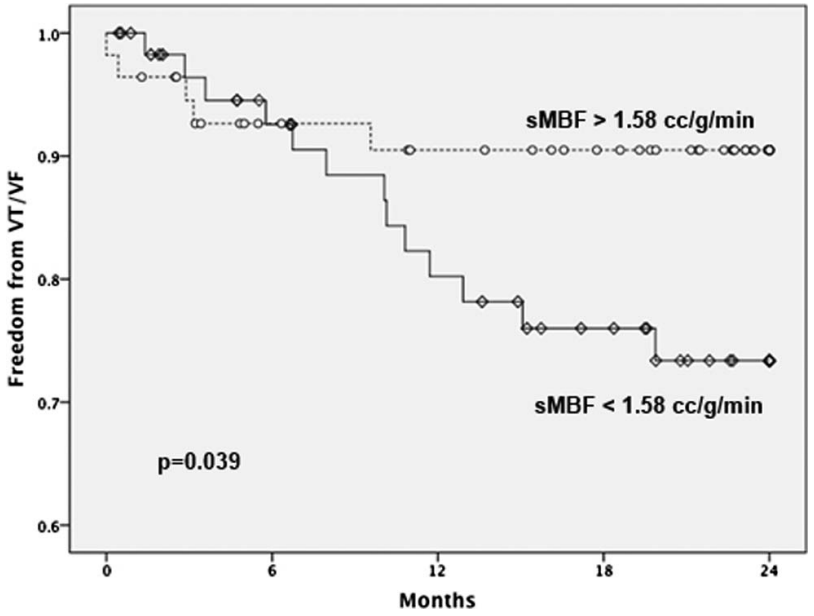
Background: The relationship between positron emission tomography (PET) whole-heart stress myocardial blood flow (sMBF) and ventricular tachyarrhythmia (VT/VF) is unknown.

Methods: We enrolled patients with an implantable cardioverter-defibrillator. All patients underwent cardiac PET stress imaging. Patients were prospectively followed for VT/VF via periodic device interrogation. Freedom from VT/VF was stratified at the median of average whole-heart sMBF and was assessed with the log-rank test.

Results: The patient population consisted of 116 patients (66 $\pm$ 13 years, 91 [78%] male, ejection fraction 31% $\pm$ 15%, 88 [76%] ischemic). During 2 years of follow-up, 18 patients had at least 1 VT/VF event. As seen in the Figure, patients with sMBF above the median (1.58 cc/g/min, interquartile range 1.25-2.06) had superior freedom from VT/VF compared to those below the median (P=0.039). Two-year event rates were 9% and 27% for those above and below the median sMBF, respectively.

Conclusion: Whole-heart sMBF as assessed by PET stress predicts VT/VF in patients with an implantable cardioverter-defibrillator.



61 T-peak to T-end Interval for Prediction of Ventricular Tachyarrhythmia and Mortality in a Primary Prevention Population with Systolic Cardiomyopathy

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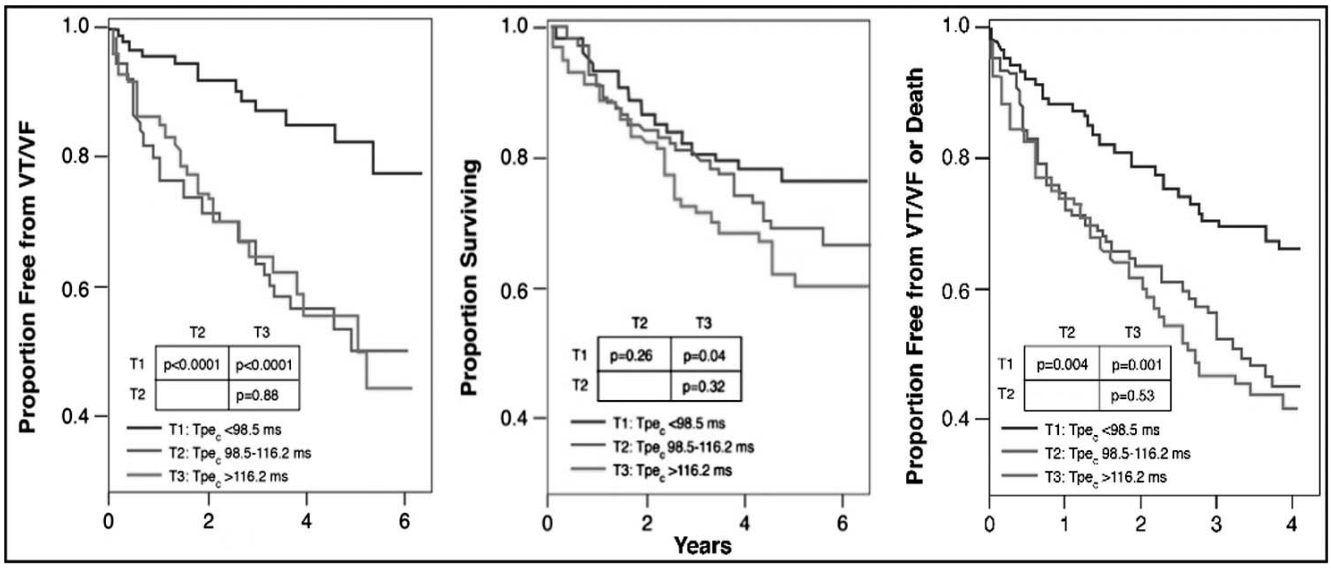
Background: The T-wave peak to T-end interval on surface electrocardiogram has been shown to correlate with the total ventricular dispersion of repolarization (DVR). Increased DVR can increase the propensity toward electrical reentry that can cause ventricular tachyarrhythmia (VT/VF). The baseline rate-corrected T-wave peak to T-end interval (Tpe_c) has been shown to predict VT/VF and/or death in multiple patient populations. However, data are lacking regarding Tpe_c's risk stratification ability in patients with systolic cardiomyopathy without prior VT/VF (ie, the primary prevention population). Primary prevention in cardiomyopathy is the most common indication for implantable cardioverter-defibrillator (ICD) implantation today.

Methods: We prospectively followed 305 patients (73% male, left ventricular ejection fraction [LVEF] 23% $\pm$ 7%) with LVEF $\leq$35% and an ICD implanted for primary prevention. Baseline ECGs were analyzed using automated algorithms. Endpoints were VT/VF, death, and a combined endpoint of VT/VF or death, assessed by device follow-up and Social Security Death Index query.

Results: The average Tpe_c was 107 $\pm$ 22 ms. During device clinic follow-up of 31 $\pm$ 23 months, 82 (27%) patients had appropriate ICD therapy for VT/VF, and during mortality follow-up of 49 $\pm$ 21 months, 91 (30%) patients died. On univariable analysis as seen in the attached Figure, Tpe_c predicted VT/VF, death, and the combined endpoint VT/VF or death ($P<0.05$ for each endpoint). Multivariable analysis included univariable predictors among demographics, clinical data, laboratory data, medications, and ECG parameters. After correction, Tpe_c remained predictive of VT/VF (hazard ratio [HR] per 10 ms increase, 1.16, $P=0.009$), all-cause mortality (HR per 10 ms, 1.13, $P=0.05$), and the combined endpoint (HR per 10 ms, 1.17, $P=0.001$).

Conclusion: Tpe_c independently predicts both VT/VF and overall mortality in patients with systolic dysfunction and ICDs implanted for primary prevention.



62 Ten-Year Atherosclerotic Cardiovascular Disease Risk Among Breast Cancer Patients Presenting to a Cardiac-Oncology Clinic

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Background: According to the National Cancer Institute, the estimated breast cancer incidence was 232,670 in 2014. As breast cancer survival increases, patients are more likely to die from cardiovascular disease than cancer. Thus, understanding the cardiovascular risk and providing appropriate preventive care are important.

Methods: We retrospectively examined the cardiovascular risk and medication management of 49 patients within our cardiology-oncology clinic at Ochsner Medical Center compared to 49 age-matched controls from our obstetrics and gynecology clinic. Data were obtained from patients' first clinic visits. Cardiovascular risk was calculated using the American College of Cardiology/American Heart Association Atherosclerotic Cardiovascular Disease (ASCVD) Risk Estimator. We also determined the prevalence of appropriate statin use in this population.

Results: The 10-year cardiovascular risk was not significantly different between the cardiology-oncology and the obstetrics and gynecology cohorts. Eighteen (36.7%) cardiology-oncology and 16 (32.7%) control patients (P=0.67) were categorized as high risk ($\geq$7.5). Within the moderate-risk group ($\geq$5 and 5% without statin use), only 5 individuals were prescribed a statin at the time of the visit.

Conclusion: We demonstrated that the ASCVD risk is similar between female breast cancer patients attending the cardiology-oncology clinic and the general obstetrics-gynecology clinic patients. We expected a higher prevalence of moderate- to high-risk ASCVD risk scores in breast cancer patients because their treatments, including anthracyclines, HER2 receptor antagonists, and chest radiation, predispose them to cardiomyopathy. Hesitation to initiate statins in this population may include physician concern of prescribing statins with concomitant chemotherapy or failure to calculate ASCVD risk scores. Improved protocols are required to improve statin prescribing in this high-risk cancer population.

63 Ostial Stenting Using the Flash Ostial Balloon: Single-Center Experience

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Background: The treatment of aorto-ostial atherosclerotic stenotic lesions with stents is technically challenging. The reported rate of geographic miss among coronary ostial lesions is as high as 54% using conventional methods. The Flash Ostial System (AccessClosure, Inc.) was designed to allow treatment of ostial lesions safely by facilitating stent positioning and allowing reengagement for future angiography. The device is a dual balloon system. The distal angioplasty balloon postdilates an ostial stent. The proximal spherical balloon flares the proximal stent edge against the aorta. To date, no data have been published about the safety or efficacy of this system.

Methods: A retrospective study was conducted spanning the 3 years that the Flash Ostial System has been used at our institution. The number of stents used, technical success, and complications were collected using the electronic medical record.

Results: During the study period, 113 lesions in 98 patients were treated with the Flash Ostial System. Treated vessels included 56 coronary arteries, 16 saphenous vein grafts, and 41 peripheral arteries. One hundred and twelve (99%) lesions were successfully treated. Ninety-five percent of the lesions were treated with a single stent (95% for coronaries, 88% for saphenous vein grafts, and 98% for peripheral vessels). Procedural complications occurred in 3 cases (3%):1 acute vessel closure, 1 vessel perforation, and 1 stent fracture with embolization.

Conclusion: This is the largest case series describing the use of the Flash Ostial System. The high procedural success rate and low complication rate demonstrate safety and suggest a potential role for this device as adjunctive therapy to stent placement for treating aorto-ostial atherosclerotic stenoses. Randomized trials comparing the Flash Ostial System to traditional techniques are warranted.

64 Associations Between Resistant Hypertension and Mental and Physical Quality of Life in Older Adults

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65 Sex-Specific Differences in Psychosocial and Other Determinants Predicting Hospital Utilization in Older Adults

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66 Clinician Satisfaction Before and After Transition from a Basic to a Comprehensive Electronic Health Record

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67 Patients Undergoing Abdominoperineal Resection for Rectal Cancer with Flap Reconstruction—Do They Benefit?

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Background: Abdominoperineal resection remains the standard of care for distal rectal cancer when an adequate distal margin cannot be obtained. However, perineal wound breakdown continues to be a significant problem especially with the increased use of radiotherapy. While flap reconstruction is a viable option for difficult closures, we hypothesized that flap reconstruction results in worse postoperative outcomes and is only appropriate in very selective cases.

Methods: We queried the American College of Surgeons National Surgical Quality Improvement Program dataset from 2009-2013 for all patients who underwent an abdominoperineal resection for rectal cancer. The cohort was then assessed for patients undergoing traditional abdominoperineal resection or flap reconstruction. Patient characteristics and postoperative outcomes were analyzed.

Results: We identified 3,494 patients. Of these, 93.5% (n=3,268) underwent an abdominoperineal resection, and 6.5% (n=226) underwent a flap reconstruction. Of patients undergoing flap reconstruction, 53.0% had preoperative radiation vs 42.0% of those without a flap ($P<0.077$). In comparison with abdominoperineal resection, flap reconstruction was associated with longer operative time (435.35 vs 267.12 minutes, $P<0.01$), increased length of stay (11.74 vs 9.22 days, $P<0.01$), increased return to the operating room (12.8% vs 6.9%, $P<0.01$), and increased dehiscence (7.1% vs 2.7%, $P<0.01$). In addition, patients undergoing a flap reconstruction were more likely to require a perioperative blood transfusion (35% vs 16.2%, $P<0.01$). There was no difference in mortality, readmission, and infectious or thrombotic complications.

Conclusion: Flap reconstruction subjects patients to longer operating times and lengths of stay with more returns to the operating room, perioperative blood transfusions, and dehiscence when compared to traditional abdominoperineal resection. Increased blood transfusion and the possible delay in adjuvant therapy secondary to wound morbidity may ultimately affect oncologic outcomes. Flap reconstruction after abdominoperineal resection for rectal cancer should be selectively employed at the cost of increased complications.

68 Current State of Colorectal Surgery Training: A Survey of Program Directors, Current Colorectal Residents, and Recent Colorectal Graduates

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69 Comparison of 30-Day Outcomes in Laparoscopic vs Robotic Colectomy

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Background: Robotic-assisted colectomy has become an increasingly utilized option for minimally invasive colorectal surgery, but studies comparing postoperative outcomes to laparoscopic colorectal surgery are limited. Our study used an administrative surgical database to compare preoperative characteristics and postoperative outcomes in patients undergoing laparoscopic colectomy (LC) vs robotic colectomy (RC). We hypothesized that there is no difference in the postoperative outcomes in patients undergoing elective LC or RC.

Methods: The American College of Surgeons National Surgical Quality Improvement Program participant use data file and procedure-targeted data file (colectomy) were retrospectively reviewed for the year 2013 to identify all patients who underwent LC or RC. Patients who underwent emergent surgery and patients who were diagnosed with preoperative sepsis were excluded. Patient characteristics, operative details, and 30-day outcomes were compared for both procedure types.

Results: Of the 17,774 colectomies included during the study period, 11,237 (63.4%) were LC and 653 (3.7%) were RC. In comparison with LC, RC was associated with increased operative time (233 vs 180 minutes, $P<0.01$) and decreased length of stay (5.04 vs 6.06 days, $P<0.01$). There was no significant difference with respect to mortality rate (0.2% vs 0.4%, $P<0.312$), anastomotic leak (3.4% vs 3.1%, $P=0.715$), reoperation (4.9% vs 4.0%, $P=0.27$), conversion rate (10.3% vs 12.2%, $P=0.13$), or readmission (9.3% vs 8.7%, $P=0.593$).

Conclusion: In this head-to-head comparison of LC and RC, the majority of postoperative outcomes were equivalent except for an increase in operative time and shorter length of stay in the RC group. RC appears to be a safe option for minimally invasive colectomy, but further studies are needed to elucidate whether it is cost effective when compared to LC.

-	Laparoscopic	Robotic	p value
N (% of overall cases)	11237 (63.4%)	653 (3.7%)	
Length of Stay (days)	6.06	5.04	<0.01
Op time (mins)	180	233	<0.01
Conversion rate	1380 (12.2%)	67 (10.3%)	0.13
Postoperative Complications			
Mortality	46 (0.4%)	1 (0.2%)	0.312
Leak	351 (3.1%)	22 (3.4%)	0.715
Readmission	984 (8.7%)	61 (9.3%)	0.593
Return to OR	453 (4.0%)	32 (4.9%)	0.27
Superficial SSI	515 (4.6%)	30 (4.6%)	0.978
Deep incis SSI	84 (0.7%)	5 (0.8%)	0.954
Organ/space SSI	388 (3.4%)	24 (3.7%)	0.753
Sepsis	249 (2.2%)	12 (1.8%)	0.527
Septic shock	101 (0.9%)	3 (0.5%)	0.243
Intra/post-op blood transfusion	717 (6.4%)	32 (4.9%)	0.134
Pneumonia	134 (1.2%)	10 (1.5%)	0.437
ARF	33 (0.3%)	2 (0.3%)	0.951
UTI	211 (1.9%)	11 (1.7%)	0.729
DVT	97 (0.9%)	5 (0.8%)	0.797
PE	49 (0.4%)	5 (0.8%)	0.221

70 Temporary Cessation of Clopidogrel and the Risk of Thrombotic or Bleeding Events in Patients Undergoing Colonoscopy

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Background: The American Society of Gastroenterologists (ASGE) guidelines for management of antithrombotic therapy recommend stopping clopidogrel (Plavix) 7-10 days prior to colonoscopy in patients determined to be at low risk of having a thrombotic event. However, the true risk of thrombotic or bleeding events in patients who temporarily stop clopidogrel for colonoscopy has not been well established. We hypothesized that stopping clopidogrel prior to colonoscopy is associated with an increased risk of thrombotic events and a minimal decrease in postpolypectomy bleeding risk.

Methods: This was an IRB-approved retrospective review of patients from 2008-2014 who underwent outpatient colonoscopy by colon and rectal surgeons at a single institution. Patient demographics, comorbidities, procedures performed, time off clopidogrel, and thrombotic and bleeding events were recorded.

Results: A total of 429 patients were identified. Clopidogrel was stopped an average of 7.00 $\pm$ 4.23 days prior to the procedure, and more than 90% of patients restarted it within 48 hours following the procedure. Mean total time off clopidogrel was 7.58 $\pm$ 4.58 days. Five thrombotic events were identified (1.2%) during the postprocedure period. Of the patients identified, 208 patients underwent polypectomy during colonoscopy (48.5%). Ten postpolypectomy bleeding events were identified (4.8%), all of which required inpatient admission. There was no significant difference in the amount of time off clopidogrel in patients who had a thrombotic event or in patients who had a bleeding event.

Conclusion: The temporary cessation of clopidogrel prior to colonoscopy is associated with an increase in thrombotic events as well as increased bleeding events compared to rates reported in the literature. Given the potential catastrophic complications associated with a thrombotic event and the limited impact of a postpolypectomy bleeding event, our data suggest that the risk of stopping clopidogrel prior to a colonoscopy may outweigh the benefit.

71 Achievement of Goal Hemoglobin A1c ($<$7%) by US Patients with Type 2 Diabetes Mellitus on Basal Insulin in Both Randomized Controlled Trials and in Clinical Practice

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72 Outcomes of Biweekly Advanced Practice Registered Nurse Phone Calls on Improvement of A1c and Self-Efficacy in Adults with Type 2 Diabetes

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Background: Patient adherence to diabetes care focusing on optimizing A1c and self-efficacy may limit long-term complications. The purpose of this project was to improve patient A1c and self-efficacy to manage diabetes using structured biweekly phone calls.

Method: A convenience sample of 75 adult participants with type 2 diabetes on insulin therapy and with A1c >7.5% were consented from August 1 to October 15, 2014. The intervention consisted of 6 biweekly phone calls to discuss blood sugar, dietary behaviors, physical activity, and insulin titration as needed. Hemoglobin A1c and a 28-item Diabetes Empowerment Scale to assess self-efficacy were used to measure outcomes preintervention and postintervention.

Results: Participants had a mean age of 61.9 years (SD=12.0), body mass index of 35.0 (SD=7.9), and diabetes for 14.9 years (SD=9.3). Preintervention mean A1c was 9.83 (SD=2.2) compared to 8.89 (SD=1.5) postintervention. Self-efficacy scores were 3.92 (SD=0.5) preintervention compared to 4.2 (SD=0.5) postintervention. The Table describes outcome measures for all 75 participants. While 81% (61/75) of participants completed at least one phone intervention, 44% (33/75) engaged in all phone calls and completed preintervention and postintervention A1c and self-efficacy surveys. Although A1c decreased and self-efficacy increased in the 72% (54/75) of participants who completed at least 4 phone calls, the largest decrease in A1c and largest increase in self-efficacy occurred in the 33 participants who completed all 6 phone calls (t=2.97, P=0.0056).

Conclusion: Among patients completing all 6 phone calls, frequent insulin titration and phone counseling by an advanced practice registered nurse demonstrated a decrease in participants' A1c and an increase in self-efficacy in this small sample. Additional longitudinal analysis in a larger sample is warranted.

Pre- and Post-Intervention Comparison of A1C and Self-Efficacy Measures

# Phone Calls	n=	A1C			n=	Self-Efficacy		
		Pre M (SD)	Post M (SD)	% Change M (SD)		Pre M (SD)	Post M (SD)	% Change M (SD)
0	2	8.25(1.49)	8.70(0.0)	0.45(0.50)	0	--	--	--
1	2	10.05(1.77)	10.10(0.14)	0.50(1.91)	0	--	--	--
2	4	11.30(3.03)	8.60(2.25)	-2.72(3.57)	2	4.16(0.42)	4.45(0.53)	0.29(0.11)
3	2	8.50(0.71)	9.1(0.85)	0.60(0.14)	2	3.97(0.11)	4.58(0.54)	0.62(0.43)
4	5	10.20(2.01)	9.20(1.30)	-1.00(1.68)	5	3.83(0.43)	4.48(0.46)	0.65(0.37)
5	16	9.50(2.11)	9.13(2.09)	-0.38(1.32)	15	4.01(0.44)	4.14(0.50)	0.12(0.35)
6	33	9.80(2.34)	8.60(1.12)	-1.15(2.21)	34	3.92(0.55)	4.21(0.63)	0.22(0.60)

Note. M=mean, SD=standard deviation; -- indicates no data available

73 Improving Endoscopic Adherence to Quality Metrics in Colonoscopy

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74 Sarcopenia and Cirrhotic Cardiomyopathy Are Frequently Found in Liver Transplant Candidates

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Background: Cirrhotic cardiomyopathy is a term that describes abnormal electrocardiographic and echocardiographic parameters in patients with cirrhosis. These abnormalities are associated with adverse prognosis in cirrhosis. Sarcopenia has only recently been described in cirrhosis and is thought to be associated with worse prognosis after liver transplant. The aim of this study was to describe the prevalence of sarcopenia and cirrhotic cardiomyopathy in a group of patients with cirrhosis who are listed for liver transplant.

Methods: This was a pilot study of 100 consecutive patients with cirrhosis who received a liver transplant between January 2012 and July 2012. A retrospective chart review collected pretransplant data such as patient demographics, clinical characteristics, etiology of liver disease, Model for End-Stage Liver Disease (MELD) score, 2D echocardiographic data (left atrial volume index), E/A ratio, QT interval, and computed tomography abdomen/pelvis data that were used to calculate psoas muscle cross-sectional area (at L4 level).

Results: The male/female ratio was 63/37, and the mean age was 53 years. The mean MELD score of these 100 patients was 24.7, indicating advanced liver disease. The etiologies of liver disease were as follows: hepatitis C 24%, hepatocellular cancer 17%, fatty liver disease 17%, alcohol-related liver disease 13%, and other 29%. Forty-seven percent of our cohort had an abnormal left atrial volume. The severity of left atrial volume enlargement was classified as mild (14%), moderate (22%), and severe (11%). Of our patients, 62% had a prolonged QT_c interval. Fifty-three percent of patients were sarcopenic as measured by psoas muscle thickness; 15% had mild, 25% had moderate, and 13% had severe sarcopenia.

Conclusion: Both sarcopenia and cirrhotic cardiomyopathy were present in more than 50% of our patients with cirrhosis listed for liver transplant. We are currently collecting clinical and laboratory data on an additional 336 patients who received transplants between January 2011 and December 2013 to assess whether the presence of sarcopenia and cirrhotic cardiomyopathy predicts mortality and morbidity after liver transplant (including prolonged hospital stay and resource utilization).

75 Early Administration of Filgrastim Following Autologous Peripheral Blood Progenitor Cell Transplantation for Lymphoma and Multiple Myeloma

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Background: Growth colony stimulating factors (G-CSF) are given to patients to decrease infection and improve time to engraftment after peripheral blood progenitor cell transplantation. Patients are given GCS-F (filgrastim) either as an early administration, defined as administration on day +3 (ie, 3 days posttransplantation), or as a late administration, defined as administration on day +8 (ie, 8 days posttransplantation). Discontinuation of G-CSF is completed at engraftment, defined as an absolute neutrophil count >500 cells/μL. The administration of G-CSF has been proven to be beneficial in autologous stem cell transplant recipients; however, the most efficacious administration timing must still be determined.

Methods: This was a retrospective chart review of peripheral blood progenitor cell transplantation patients treated with G-CSF at Ochsner Medical Center from 2010-2013. The primary outcome was time to engraftment. Secondary outcomes included the number of days of infection; length of hospital stay; and the differences in the days of fever, intravenous antibiotic use, and mucositis.

Results: Analysis of 57 patients was performed. Baseline characteristics, including age, sex, cancer type, and chemotherapeutic induction were similar between both the early and late groups. Shorter hospital length of stay was statistically significant in the early group (P=0.0191). Time to engraftment was statistically significantly shorter in the early group (P=0.0012). Early administration of G-CSF shows a trend toward fewer days to engraftment and shorter hospital length of stay.

Conclusion: This analysis showed a trend toward decreased length of stay and time to engraftment in the early administration group. However, to fully assess the optimal timing of G-CSF administration, additional patients need to be analyzed and compared.

76 Effect of Dose of Melphalan Used in Conditioning Regimen on Outcomes of Autologous Stem Cell Transplantation in Overweight/Obese Patients with Multiple Myeloma

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Background: Melphalan at 200 mg/m^2 has been an established conditioning regimen in patients undergoing autologous hematopoietic stem cell transplant (ASCT) with multiple myeloma (MM). There are no clear guidelines on melphalan dosing for obese patients. Consequently, ideal body weight (IBW) or adjusted body weight (ABW) dosing rather than dosing based on actual body surface area has often been used in an attempt to minimize toxicity. The impact of such a dosing algorithm is not clear. We did a retrospective analysis comparing short- and long-term outcomes in the differently dosed overweight/obese MM patients.

Methods: We conducted a retrospective chart review of overweight and obese (body mass index $\geq$25 kg/m^2) MM patients treated from January 1, 2011 through March 31, 2014 at the bone marrow transplant program at Ochsner Cancer Institute in New Orleans, LA. The ratio of administered dose (IBW- or ABW-based dose) to actual body surface area–based dose was calculated. We subdivided the cohort into 2 groups based on this ratio: Group 1 (ratio $\leq$0.95) and Group 2 (ratio $>$0.95). We compared short-term outcomes with respect to days to engraftment, immediate toxicity, and long-term outcomes using International Myeloma Working Group criteria at day 100 and year 1.

Results: Twenty-six patients were studied with mean duration of follow-up of 1,053 days in Group 1 (n=10) and 446 days in Group 2 (n=16). Results are summarized in the Table.

Conclusion: We did not detect a statistically significant difference in short- or long-term outcomes when melphalan was dosed differently in obese MM patients undergoing ASCT in our short case series.

Group	**1**	**2**	**P value**
Class of obesity	(%)	(%)	0.34
Overweight	40	68.8	
Class I obesity	10	31.2	
Class II obesity	50	0	
Short Term Outcomes			
Length of stay, days	18.9	17.6	
Nausea/vomiting, %	80	62.5	0.61
Diarrhea, %	50	81.3	0.21
Mucositis, %	50	37.5	0.83
Mean days to ANC engraftment	11.8	11.1	0.60
Mean days to platelet engraftment	16.3	18.6	0.16
Long Term Outcomes			
Time to relapse, days	679	592	0.71
Day 100 assessment	**(%)**	**(%)**	
sCR	10	12.5	0.026
Cr	80	50	
VGPR	0	37.5	
PD	10	0	
Year 1 assessment	(%)	(%)	
sCr	20	7.1	0.84
Cr	20	21.4	
VGPR	20	35.7	
SD	0	7.1	
PD	40	28.6	

77 Comparison of High-Definition White Light Endoscopy (HD-WLE) vs High-Definition Microscopy in Patients Diagnosed with Barrett Esophagus: A Retrospective Review

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Background: Probe-based confocal laser endomicroscopy (pCLE) is a new technique that allows *in vivo* detection of neoplastic tissue using an endoscope. Our aim was to compare the dysplasia detection rate of biopsies obtained by

high-definition white light endoscopy (HD-WLE) or by pCLE in a cohort of patients with Barrett esophagus referred for definitive therapy with ablation.

Methods: Data for 218 patients with Barrett esophagus were reviewed. Of these, 105 patients underwent pCLE in addition to HD-WLE. Protocol biopsies were obtained in the HD-WLE-only group, while targeted biopsies were taken in pCLE group. Diagnosis of dysplasia/neoplasia was made by a blinded gastrointestinal pathologist. The pCLE images were reviewed by 2 experienced reviewers. Data were analyzed with SAS software (version 9.4). Categorical variables were analyzed using the Pearson chi-square test. Continuous variables were assessed for normality via the Shapiro-Wilk statistic, and then the *t* test or Wilcoxon rank sum test was applied when appropriate. Multivariate logistic regression was used. *P* values <0.05 were considered statistically significant.

Results: More males ($P=0.016$) and Caucasians ($P=0.004$) were in the non-pCLE group, and this group was slightly older ($P=0.0081$). Histologic diagnosis of dysplasia was significantly higher in the pCLE group ($P=0.0052$): 22.86% of patients were diagnosed with dysplasia in the group with pCLE, and 9.09% of patients were diagnosed in the group without pCLE. Logistic regression analysis indicated that age ($P=0.006$) and use of pCLE ($P=0.0019$) were significantly related to positive histologic dysplasia diagnosis. There was a significantly higher quantity of biopsies in the pCLE group ($P=0.0041$), specifically high-grade dysplasia biopsies ($P=0.0019$).

Conclusion: Incident dysplasia can be more frequently detected by pCLE than by HD-WLE in patients with Barrett esophagus. The higher dysplasia detection rate provided by pCLE could improve the efficacy of Barrett esophagus surveillance programs and lead to early detection and ablative therapy. Also, pCLE targeted biopsies have a higher yield of dysplasia versus standard biopsies.

78 Adenosquamous Carcinoma of the Lung: A Single-Institution Experience in the Era of Molecular Testing

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Background: Adenosquamous carcinoma of the lung is a rare subtype of non–small cell lung cancer that compromises 0.4%-4% of all lung cancers and is thought to carry a worse prognosis than adenocarcinoma or squamous cell carcinoma. Epidermal growth factor receptor and anaplastic lymphoma kinase mutations have been observed in patients. However, the frequency of testing these mutations, characteristics, and outcomes is unknown.

Methods: We retrospectively identified all patients seen in the oncology clinic for adenosquamous carcinoma during the last 10 years (January 1, 2005 to January 1, 2015).

Results: Sixteen patients were identified. Their median age at diagnosis was 71 years (52-85 years), 63% were male, and 81% had a smoking history. Thirty-seven percent had stage I, 18% had stage II, 18% had stage III, and 25% had stage IV disease at diagnosis. Thirteen percent developed metastatic disease after treatment for stage III disease. Seventy-five percent of patients diagnosed with metastatic disease after 2012 were tested for epidermal growth factor receptor and anaplastic lymphoma kinase, while none diagnosed prior to 2012 was tested. All patients were negative for epidermal growth factor receptor and anaplastic lymphoma kinase mutations. All patients with stage I and II received only surgery; patients with stage III got multimodality treatment with chemotherapy, radiation, and surgery. All patients with metastatic disease received chemotherapy with regimens similar to those for adenocarcinoma or squamous cell carcinoma of the lung. The median overall survival for patients with localized disease was 48.3 months (48.0 months-NA). The median overall survival for patients with metastatic disease was 5.4 months (2.3-9.2 months).

Conclusion: Our analysis showed that patients with localized adenosquamous carcinoma of the lung had similar outcomes to those of historical patients with localized adenocarcinoma or squamous cell carcinoma of the lung. However, patients with metastatic adenosquamous carcinoma of the lung had worse outcomes than historical patients with metastatic adenocarcinoma or squamous cell carcinoma of the lung even with the same chemotherapy. Few patients had epidermal growth factor receptor and anaplastic lymphoma kinase testing, but this testing is becoming more routine.

79 Decreasing Healthcare-Acquired *Clostridium difficile* Infections

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Background: According to the US Centers for Disease Control and Prevention, an estimated 107,700 hospital-acquired *Clostridium difficile* infections (CDIs) occurred in US hospitals in 2012. CDIs have been associated with a mortality rate of 6.9% at 30 days after diagnosis and 16.7% at 1 year. The estimated cost per infection ranges from $6,000-$9,000, and the estimated national total cost to treat CDI per year ranges from $1-$1.6 billion. The increased morbidity and mortality associated with CDI provide the incentive for healthcare providers to intensify efforts toward implementing prevention strategies that can be consistently applied across the continuum of healthcare.

Methods: The purpose of this project was to implement best practices for the prevention of healthcare-acquired CDIs in a 179-bed acute-care hospital. Stakeholders were all staff involved in the continuum of patient care. Surveillance was

conducted on positive *C. difficile* toxin results to determine if they were healthcare acquired, and then they were tracked. The data were reported monthly to unit directors and at the facility's Performance Improvement/Infection Control Committee meetings. Education was provided to frontline staff regarding hand hygiene practices specific for CDI and the timely placement of potential CDI patients in isolation prior to lab confirmation.

Results: Since project inception, a decreasing trend of healthcare-acquired CDIs has been observed. The rate of healthcare-acquired CDIs/1,000 patient days decreased from 3.07 in 2011 to 0.10 in 2014. A decreased overall cost of healthcare-acquired CDIs was observed from $24,000 in 2011 to $18,000 in 2014 based on the conservative estimate of a cost of $6,000 per CDI.

Conclusion: Implications for nursing include continued education and surveillance on isolation and hand hygiene best practices for CDIs to prevent spread.

80 Increasing Smart Pump Utilization Compliance for Intravenous Medication Administration

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Background: A smart pump is an intravenous (IV) fluid infusion machine that has drug administration safety software with population-specific drug profiles. The pharmacist is responsible for inputting the drug-administration parameters for each safety profile and updating the drug library with new information. Smart pump drug profiles (guardrails) can be used to direct drug administration through the utilization of safety alerts/warnings. Smart pumps are designed to reduce medication errors and to provide pertinent data that support the need for quality care improvement. The aim of this project was to increase the compliance rate of guardrails utilization to 90% for all nursing units in a 179-bed acute-care hospital.

Methods: Stakeholders included staff involved in the continuum of patient care. An interdisciplinary team collaborated to increase the use of guardrails for all IV medication administrations using the following Plan-Do-Study-Act cycles: (1) daily transparency of compliance data with unit leads, (2) the addition of profiles for specific populations, (3) guardrails utilization staff education, (4) the addition of medications that were missing or required dosing range changes, (5) the examination of department profiles to determine outliers to receive individual instruction to improve individual compliance, (6) the inclusion of guardrails utilization data reports in interprofessional council meetings and weekly huddles, and (7) the attachment of reminder signs to utilize guardrails on IV pumps. Guardrails compliance data was collected from January 2013-December 2014.

Results: Since the project began, the compliance with utilization of guardrails increased from 67.1% (June 2014) to 97.0% (December 2014) for the facility. It is not yet known whether these compliance rates will be sustained.

Conclusion: An interdisciplinary approach is key to increase and sustain compliance with guardrails utilization. Next steps include tracking IV medication errors to determine if medication safety is improved.

81 Inpatient Falls: Prevention Is the Key

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Background: Functional decline contributes to increased falls, delirium, loss of ability to perform activities of daily living, and ambulating independence. This project was designed to increase our patient satisfaction scores relative to response time to call and attention to patient needs, decrease our length of stay, and decrease the incidence of falls by adding new prevention strategies to our current multifactorial intervention program.

Methods: An interdisciplinary approach was used to incorporate communication between healthcare providers and patients. The stakeholders used a fall risk level screening tool called STRATIFY. We created a fall risk guideline and did one-on-one education with staff. The fall prevention brochure and contingency contract between nurse/patient/family were reviewed with patients upon admittance. Studer Group Rounding was implemented. Stakeholders were educated on a physical therapy/occupational therapy assessment tool. The Mobility Tech Program was initiated to increase the activity level of our patients by ambulating those who were able to walk with minimal assistance 3 times a day. We developed and implemented the mobility/activity circles for nurses to go over during bedside shift report.

Results: During the 16 weeks of observation, the fall rate on 4B was reduced from July-September and on 5A from July-August, using number of patient falls/1,000 patient days.

Conclusion: In addition to decreased fall rate, we also found length of stay numbers decreased overall from 5.67 to 5.0 (>1/2 day) by implementing the Mobility Tech Program. Also, the patient satisfaction scores for attention to personal needs and prompt response to call had a positive increase from June to September.

82 Evaluation of Nonstandardized Hyperkalemia Management in the General Medicine Population at Ochsner Medical Center

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Background: Hyperkalemia is a medical emergency requiring prompt medical treatment. Treatment options include insulin, beta-agonists, Kayexalate, and calcium gluconate to shift potassium intracellularly, excrete excess potassium, and stabilize cardiac myocytes, respectively. Complications of treatment include hypoglycemia, overcorrection of potassium, or other electrolyte disturbances. The purpose of this study was to evaluate our current management of hyperkalemia in hospitalized adult patients and identify potential areas of improvement.

Methods: This single-center, retrospective cohort study was submitted to and approved by our institutional review board. Patients were identified based on potassium ($K+$) >5.1 mEq/L or the administration of medications used in the treatment of hyperkalemia. Adult patients treated for hyperkalemia from January 2014-March 2014 were reviewed. Pediatric, critically ill, and solid organ–transplant patients were excluded. Primary outcome was time to resolution of hyperkalemia ($K+$ <5.1 mEq/L). Secondary outcomes included time to treatment initiation and incidence of adverse events related to treatment.

Results: One hundred eighty-nine records were reviewed, with 80 records meeting inclusion criteria. The average time to $K+$ <5.1 mEq/L was 12.86 hours for all treatment modalities. Using a combination of agents offered a faster time to $K+$ <5.1 mEq/L, with an average of 11.45 hours. Time to treatment initiation was shortest in the emergency department (4.1 hours) and longest in the general medicine units (10.77 hours). The most common adverse effect of treatment included hypokalemia (33%), hypocalcemia (27%), and hypoglycemia (12%).

Conclusion: Correction of hyperkalemia seems to benefit from a multimodal approach. Treatment initiation for hyperkalemia was most rapid in the emergency department, although lab turnaround time may have influenced overestimations in time-to-treatment initiation in other units. Adverse effects of hyperkalemia treatment are generally mild and mostly limited to overcorrection of serum potassium or decreased serum calcium.

83 Utilizing EHR Decision Support Tools with Provider Education to Reduce Inappropriate Stress Ulcer Prophylaxis

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Background: Stress ulcers have significant morbidity and mortality in critically ill patients. In this population, the number needed to prevent 1 hemodynamically significant GI bleed is 30. However, in noncritically ill patients, the number needed to treat changes to 900, which negates the need for stress ulcer prophylaxis (SUP) outside the ICU. Continuing inappropriate SUP in patients after their ICU stay is also associated with significant morbidity through the development of *Clostridium difficile* colitis, hospital-acquired pneumonia, and hip fractures.

Methods: Our study was conducted in a 15-bed community ICU. Our primary intervention was a best practice advisory in the electronic health record (EHR) reminding clinicians to discontinue inappropriate SUP upon transfer of patients out of the ICU. Our secondary intervention was a presentation given to hospital medicine staff. We performed a preintervention and postintervention analysis of 131 patients who were admitted to the ICU over the course of 7 months. The preintervention group included 55 patients, 24 of whom met inclusion criteria. The postintervention group included 76 patients, 21 of whom met inclusion criteria. We assessed whether SUP was discontinued for any of the included patients after transfer out of ICU and prior to discharge. Data from preintervention and postintervention were analyzed using a chi-square test and compared for statistical significance using $P<0.05$.

Results: Our results demonstrated a clear trend toward appropriate discontinuation of SUP in the postintervention group (90.5%) vs the preintervention group (70.8%) ($P=0.10$). Although our trial did not achieve statistical significance, the sample size was quite small and could be easily generalizable to a larger patient population.

Conclusion: These data clearly demonstrate the utility of the EHR for clinician education and for influencing prescribing behavior in physicians, especially given the relative ease with which these interventions can be implemented.

84 Pain Care Quality and Patient Perception of Pain Care

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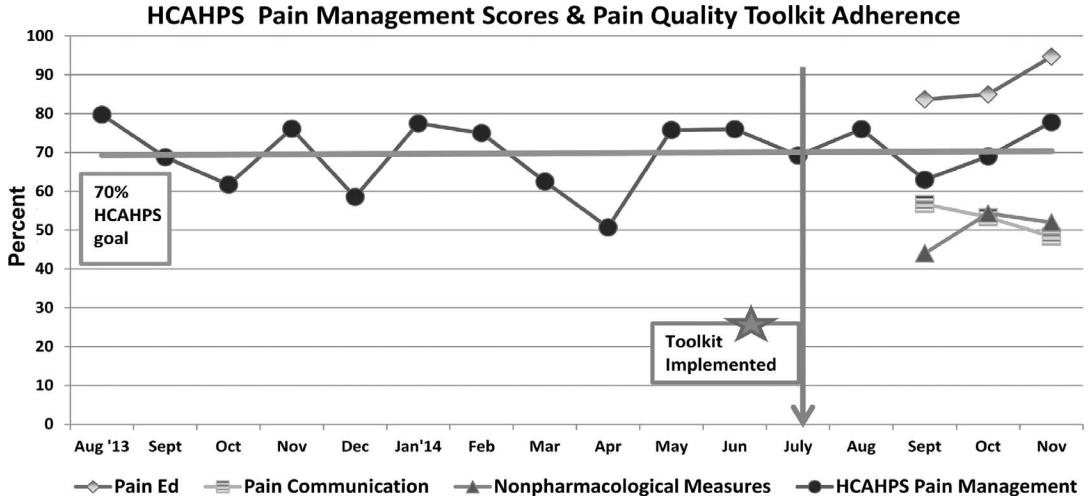
Background: Evidence supports that quality pain management improves patients' reports of satisfaction even if pain is not always eliminated. The goal of this project was to implement/sustain processes to enhance patients' perception of pain care by implementing a pain care quality toolkit into the standard of care for 3 nursing units.

Methods: We implemented and evaluated a Plan-Do-Study-Act methodology–guided project. In July 2014, an evidence-based pain care quality toolkit was adopted that included communication whiteboards, pain scales, patient education, hourly rounding, and nonpharmacologic strategies. Project outcomes included monthly collection of Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) pain scores and inpatient responses to the 6-item Pain Care Quality-Nursing (PainCQ-N) survey using a prevalence methodology. Weekly pain care quality toolkit adherence audits were conducted and reported monthly. Comparisons between preintervention (March-June 2014) and postintervention (July-November 2014) outcomes were performed using paired *t* tests (HCAHPS) or Wilcoxon signed rank test (PainCQ-N).

Results: There was a significant improvement (t=4.3822, $P<0.0001$) in HCAHPS pain scores for all units when preintervention outcomes (n=112, M=66.25%, SD=10.5) were compared to postintervention outcomes (n=120, M=71%, SD=5.34%). Adherence to pain education and adjunctive pain management strategy components of the toolkit improved compared to communication of the pain plan component (Figure). There were no significant differences in preintervention (n=23) and postintervention (n=65) PainCQ-N survey ratings ($P>0.05$).

Conclusion: PainCQ-N ratings have not demonstrated improvement, and despite significant increases in HCAHPS scores postintervention, there are too few data points to support any trend. Continued monitoring of adherence with utilization of the toolkit and pain care quality measures is warranted to guide and sustain process improvement.



85 Holy Foley! A Campaign to Improve CAUTI Rates in Two ICUs

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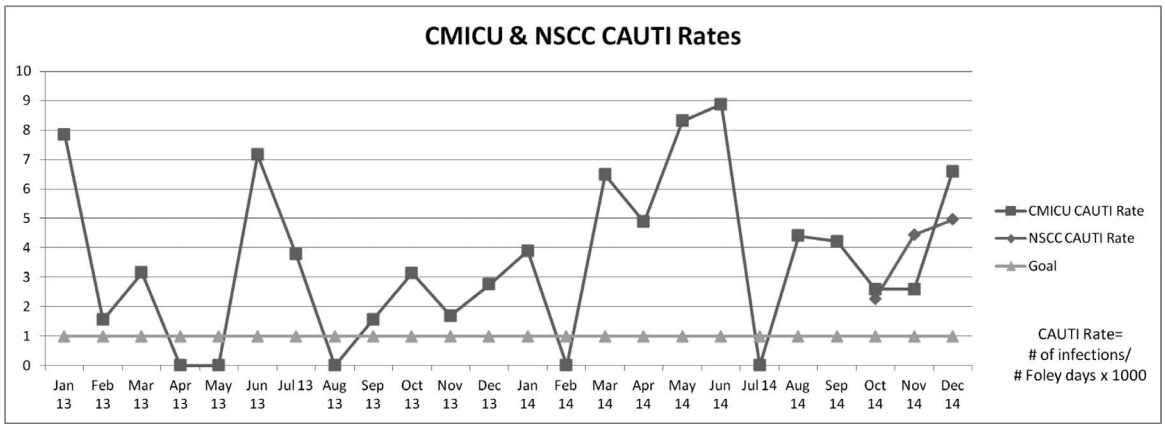
Background: Prevention of catheter-associated urinary tract infections (CAUTIs) is an issue of national concern. Healthcare facilities are expected to implement evidence-based practices to eliminate CAUTIs. CAUTI prevention carries implications for quality care and patient safety as well as healthcare reimbursements. Despite high compliance rates (83%-100%) with a CAUTI bundle (hand hygiene, daily evaluation of necessity, perineal care, securement devices, and patient/family education), the CAUTI infection rates for 2014 remained the highest in the organization (0-8.9/1,000 patient days) and well over the National Healthcare Safety Network's goal of <1 CAUTI/1,000 patient days.

Methods: In response to persistently high rates, the Cardiac Neuro ICU (CNICU) Comprehensive Unit-Based Safety Program (CUSP) team launched a rejuvenated CAUTI prevention campaign called "Holy Foley!" in June 2014. The initiative included daily leader rounding to monitor adherence to perineal care, elimination of bath basins, and 2-person Foley insertion to ensure sterile insertion. During leader rounds, perineal care was assessed. If the perineal care was substandard, the leader performed perineal care with the bedside nurse to provide one-on-one coaching.

Results: Compliance with the CAUTI bundle continues to be high (83%-100%). In July 2014, the CAUTI rate decreased to zero, but this improvement has not been sustained (Graph). Since the project began, the CNICU unit has split into 2 units: Cardiac Medical ICU (CMICU) and Neurosciences Critical Care (NSCC). The CUSP teams on both units have continued the project.

Conclusion: Interprofessional collaboration is needed to drive and sustain quality initiatives. A nurse-driven guideline for Foley removal has been developed by Infection Control and is pending system approval that is expected to decrease Foley utilization and CAUTI rates.



86 Acceptance of Fluzone Intradermal Among Patients Aged 18-64 Years Vaccinated During the 2011-2012 Influenza Season

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Background: Although influenza is a major cause of morbidity and mortality throughout the world, vaccination rates are still not optimal. Fear of needles is one reason cited by patients and healthcare workers (HCW) for declining vaccination. In May 2011, an intradermal (ID) influenza vaccine (Fluzone Intradermal, Sanofi Pasteur, Inc.) was introduced in the United States. This vaccine delivery system is designed for minimal needlestick exposure. One prior study assessed patient acceptance of this vaccine in the United States with positive results. Our objective was to evaluate the acceptability of the ID vaccine vs the intramuscular (IM) vaccine in our HCWs aged 18-64 years during the 2011-2012 influenza season at Ochsner Medical Center, New Orleans, LA.

Methods: Patients were enrolled during our employee flu fair. Employees were offered the ID flu vaccine instead of the IM vaccine; those who accepted the ID vaccine were asked to complete a survey on day 1 and a follow-up on day 7. Questions addressed preferences and demographic information. Data were compiled in Excel and analyzed in SAS (version 9.4, SAS Institute).

Results: Of the 414 participants, 355 (88.31%) were very satisfied with the ID route. A total of 252 (73.26%) reported that the pain associated with the ID injection was better than the IM route. Preference for the ID influenza vaccination on day 1 was 74.28% (257/414) and on day 7, it was 51.98% (118/414). More than half of the participants (51.98%) preferred the ID route for future influenza vaccinations.

Conclusion: This study demonstrates that the ID influenza vaccine was well accepted, and $>$50% of those vaccinated would prefer it over the IM vaccine in the future. Additional route choices would certainly alleviate anxiety and pain in patients and HCWs, hopefully leading to higher vaccination rates.

87 Comparison of Efficacy and Safety of Extended-Infusion Piperacillin-Tazobactam vs Traditional-Infusion Piperacillin-Tazobactam

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Background: Antimicrobial resistance is an increasing problem. With a limited number of new antimicrobials currently in development, optimization of available antimicrobial therapy is crucial. One strategy that may be useful is prolonging the infusion time of beta-lactam antibiotics. The purpose of this study was to compare the efficacy and safety of traditional-infusion piperacillin-tazobactam (TI-PT) and extended-infusion piperacillin-tazobactam (EI-PT) after the implementation of an extended-infusion protocol at an academic medical institution. The primary outcomes were efficacy and safety. Efficacy was determined by hospital length of stay, and safety was determined by adverse events such as acute kidney injury and leucopenia.

Methods: We retrospectively collected data from the institution's electronic medical records of patients receiving piperacillin-tazobactam prior to and after the extended-infusion protocol implementation. We compared data on mortality, length of stay, ICU admissions, number of central venous lines inserted, incidence of kidney injury, and leucopenia. We also conducted an a priori subgroup analysis on clinic cure rates in bacteremic patients in the ICU.

Results: Patients in the EI-PT group had a significantly lower incidence of in-hospital mortality compared to the TI-PT group (6% vs 15%, $P<0.05$). Patients in the EI-PT group also had a significantly lower incidence of 14-day in-hospital mortality compared to the TI-PT group (4% vs 11%; $P<0.05$). No statistically significant differences between the EI-PT and TI-PT groups were observed for hospital length of stay, acute kidney injury, or leucopenia.

Conclusion: These results indicate that EI-PT therapy is a suitable alternative to TI-PT therapy and suggest that EI-TP therapy may be associated with decreased mortality.

88 MCAT Scores Identify At-Risk Ochsner Clinical School Students

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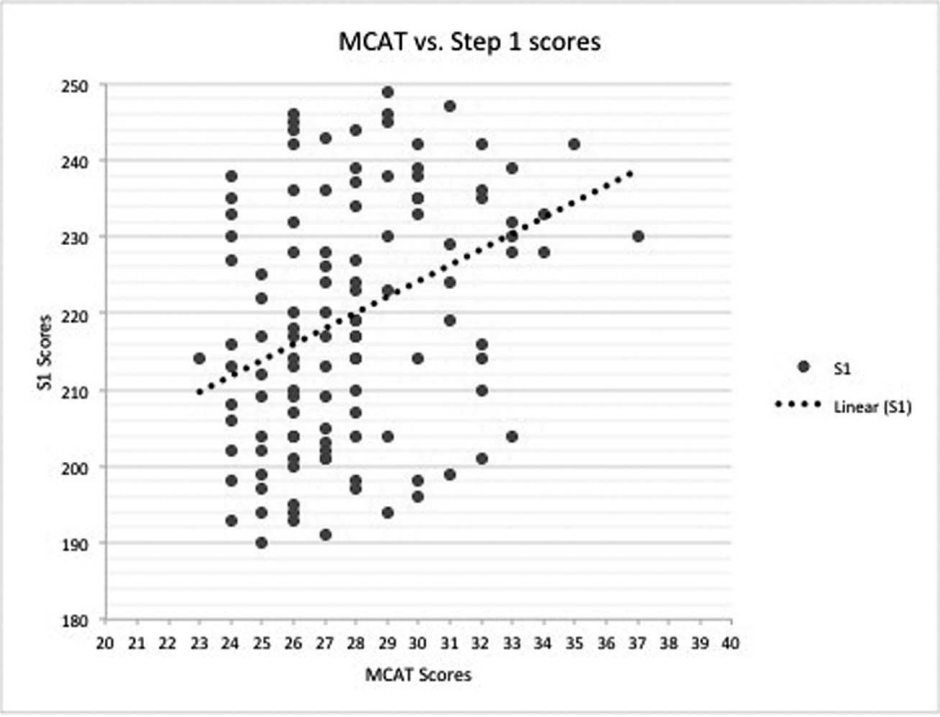
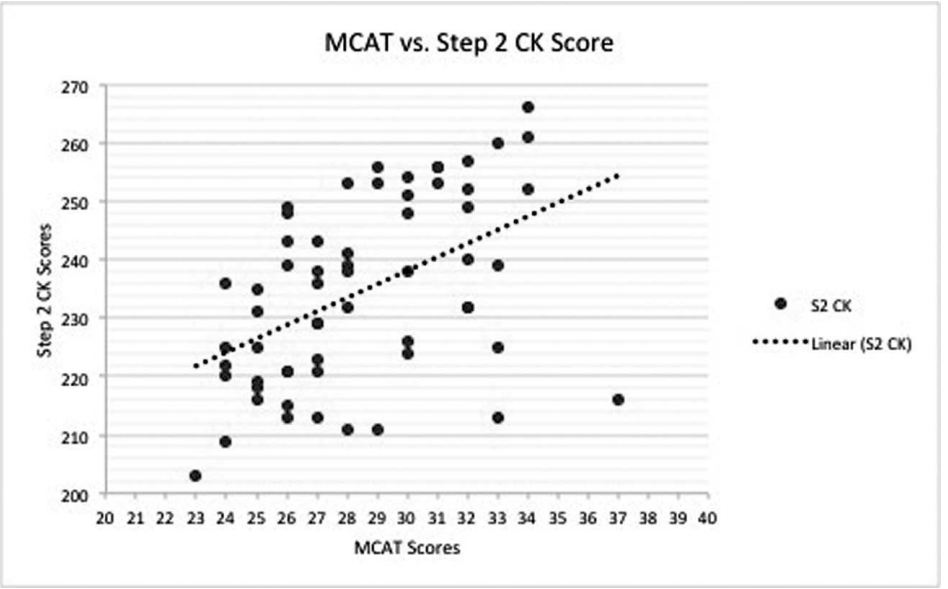
Background: The Medical College Admission Test (MCAT) has been shown to correlate with medical students' performance on the Step 1 exam. The Ochsner Clinical School (OCS) is a unique medical school partnership with The University of Queensland (UQ) School of Medicine, and it is not known how MCAT scores correlate with academic performance in this unique environment.

Methods: The MCAT scores of all students who matriculated in the program (n=140) from 2008-2014 were compared with each student's academic performance as measured by a number of variables. These variables included grade point average (GPA) during years 3 and 4; GPA during phase I, phase II, and overall GPA; course failure; first-time pass rate for Step 1 and Step 2 CK; Step 1 and Step 2 CK scores; and match rates.

Results: The mean MCAT score was 27.9 (SD 2.89). The MCAT score positively correlated with phase I GPA (r=0.19, P=0.02), year 3 GPA (r=0.35, P=0.003), and overall GPA (r=0.43, P=0.005). The score also positively correlated with both the Step 1 (r=0.33, P=0.002) (Figure 1) and Step 2 CK scores (r=0.48, $P<0.0001$) (Figure 2). ROC analysis indicates that students with MCAT scores >28 are less likely to have academic difficulty throughout their schooling (AUC=0.78, P=0.0076).

Conclusion: An MCAT score <28 in this initial cohort of OCS students is associated with an increased risk of academic difficulties in medical school. Awareness of this correlation may allow identification of students who may benefit from additional interventions to prevent suboptimal medical school performance.





89 Evaluation of Diabetic Management in Chronic Kidney Disease

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Background: Chronic kidney disease (CKD) is one of the most common manifestations of diabetes. During the later course of the disease, there is a normalization of glycemic and hemoglobin A1c (HbA1c) levels in many diabetic patients. This burned-out diabetes phenomenon is seen in general practices across the country; it has been recorded that up to one-third of dialysis patients will no longer need medication. Consensus of how to manage this subset of patients is necessary to prevent morbidity and mortality complications.

Methods: This study was a retrospective chart review to analyze trends in medication management in diabetic individuals with and without CKD. Data were drawn from the Ochsner electronic medical record from 2012-2014. Inclusion criteria included age >45, diabetic diagnosis, and 4 HbA1c readings during the time period. Data were divided into 2 populations: a cohort of 798 individuals with a CKD diagnosis and a cohort of 10,702 individuals without a CKD diagnosis. Cohorts were evaluated based on discontinuation of diabetic medication during the 3-year time period.

Results: Statistical analysis was performed using chi square to assess the significance of end-stage renal disease on diabetic medication necessity. The chi-square statistic was 2.9142 with a *P* value of 0.087. Further investigation of the 47 individuals identified as diabetics with end-stage renal disease and no medication management showed 28% with burned-out diabetes. The average HbA1c of these individuals was 6.34%.

Conclusion: While there was no statistical difference between the 2 cohorts in diabetic medication management, there exists an observable trend that shows the described burned-out diabetes phenomenon. It is important to identify these individuals early in practice as their management greatly influences their medical outcomes. The Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial recommended HbA1c values of 7.0%-8.0% to decrease the risk of hypoglycemic events and associated morbidity and mortality.

90 Intention-to-Treat Analysis in Randomized Controlled Trials: Matching Intentions and Reports

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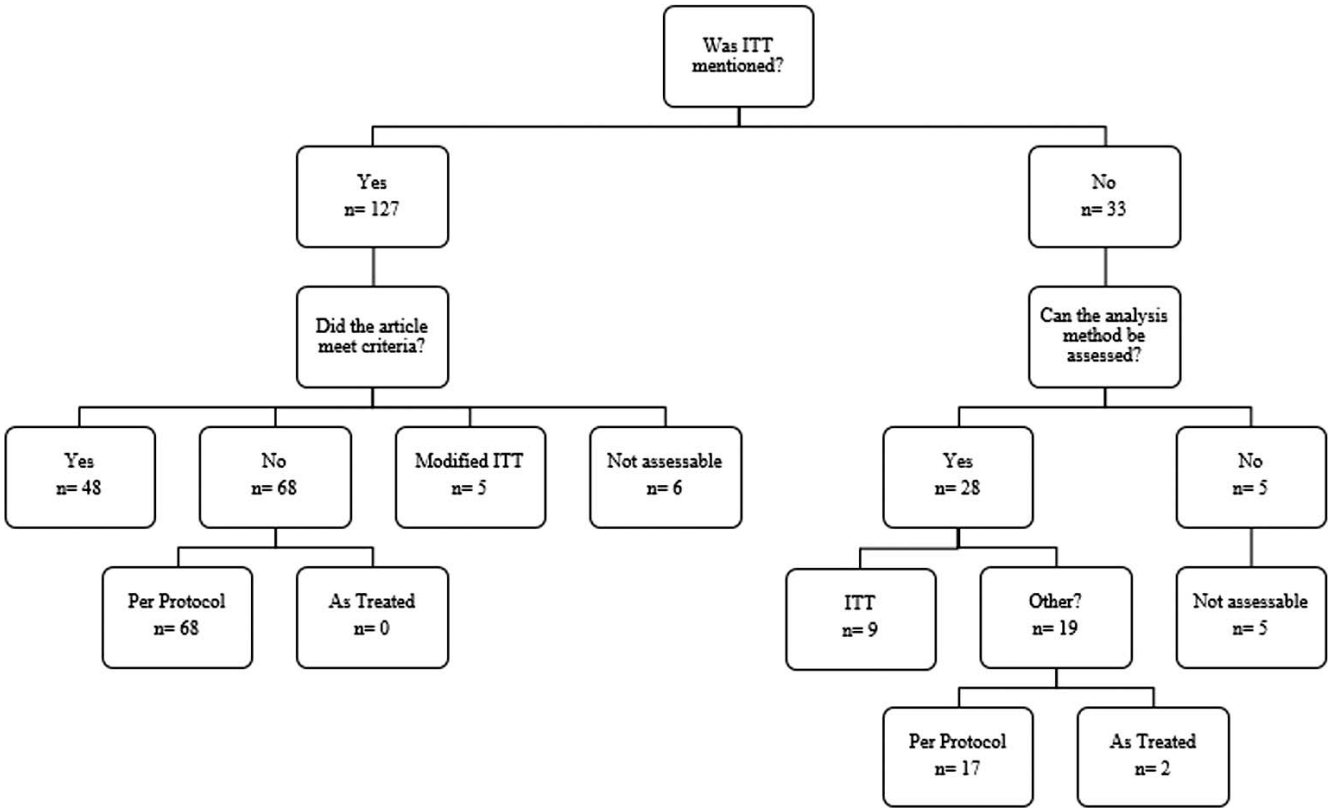
Background: Intention-to-treat (ITT) is considered a gold standard for the analysis of randomized controlled trials (RCTs). Subjects are analyzed in the study arm they are assigned, regardless of their status at the end of the trial. While this procedure may seem straightforward, there are many variations to this model. This study aimed to review analysis methods reported in RCTs published in 6 high-impact leading journals during 10 years.

Methods: RCTs were extracted from the *British Medical Journal (BMJ)*, *Journal of the American Medical Association (JAMA)*, *JAMA Internal Medicine, Lancet*, *New England Journal of Medicine (NEJM)*, and *PLOS Medicine* for each of the years 2003, 2008, and 2013. We determined if ITT analysis was reported and conducted accordingly or what other method of analysis was used.

Results: Results for all journals are displayed in the Figure; overall, 79.4% reported using ITT, of which 34.6% correctly followed procedure, while 59.8% did not. The remaining 20.6% did not report ITT; however, 30.3% of those did follow a procedure consistent with ITT. Based on year, 2003 had the lowest claimed usage of ITT (66.0% of manuscripts) but the highest use of procedures consistent with ITT (48.5%). Among journals, *BMJ* and *NEJM* had the greatest percent of RCTs claiming ITT (86.7%). *Lancet* RCTs reported 83.3% usage, *JAMA* 73.3%, and *JAMA Internal Medicine* 66.7%. *Lancet* had the highest appropriate usage of procedures consistent with ITT (48.0%), while *BMJ* had the lowest (23.1%). Finally, *PLOS* claimed a frequency of 80.0% with 25.0% usage.

Conclusion: Our preliminary results show that manuscripts published in high-impact journals report wide usage of ITT analysis. However, more often than not, the data are not analyzed according to ITT principles.



91 Randomized Controlled Trial to Test the Effectiveness of a Multicomponent Intervention to Reduce Delirium in Acute Stroke

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92 Blood-Brain Barrier Permeability Measured with Computed Tomography Predicts Infarct Expansion Following Acute Ischemic Stroke: Segmentation Test-Retest

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Background: Deterioration of the blood-brain barrier may contribute to infarct expansion following acute ischemic stroke. As the final infarct volume is an important determinant of patient outcome, prediction of infarct growth is an important prognostic criterion. The aim of this study was to evaluate the relationship between blood-brain barrier permeability estimated with perfusion computed tomography (CT) and infarct expansion.

Methods: Thirty patients were enrolled in this study. Blood-brain barrier permeability was measured with perfusion CT using the Gjedde-Patlak plot. Follow-up imaging was subsequently performed at least 5 days after stroke onset. Linear regression was used to test the relationship between increased blood-brain barrier permeability and the percentage of penumbral volume that progressed to infarction—the infarct expansion ratio. The infarct expansion ratio at different permeability thresholds was also calculated.

Results: Blood-brain barrier permeability was correlated with infarct expansion ratio ($R=0.40$, $P<0.05$). This correlation was stronger in untreated patients than in patients who underwent recanalization treatment. Blood-brain barrier permeability in the area of the penumbra that progressed to infarction was significantly higher than that in surviving penumbra ($t=6.4$, $P<0.001$). Approximately 25% of penumbral tissue with a permeability $\geq$3 mL/100g/min progressed to infarction.

Conclusion: Increased blood-brain barrier permeability correlates with infarct expansion in patients following acute ischemic stroke, particularly in untreated patients.

93 Penumbra 5MAX ACE Catheter Is Safe, Efficient, and Cost Effective as Primary Mechanical Thrombectomy Device for Large Vessel Occlusions in Acute Ischemic Stroke

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Background: Recent literature suggests reperfusion of large vessel occlusions (LVOs) in acute stroke improves patient outcomes. The purpose of this study was to assess the safety and efficacy of the novel Penumbra 5MAX ACE catheter and compare its cost to stent retrievers.

Methods: In this retrospective, single-center, case review study, data were captured for consecutive patients treated with the recently introduced 5MAX ACE as first-line therapy during an 11-month period. Good functional outcome was measured as a modified Rankin Scale score (mRS) $\leq$2 at discharge. Results were compared with previously published data for stent retrievers.

Results: A total of 31 consecutive patients were studied (mean age 66.3 years, mean National Institutes of Health Stroke Scale/Score 19.4). Intravenous tissue plasminogen activator (t-PA) therapy was initiated in 11/31 (35%) of patients. A Thrombolysis in Cerebral Infarction (TICI) score of 2b-3 reperfusion after endovascular therapy was achieved in 26/31 (84%) of cases; TICI 3 was achieved in 19/31 (61%). Average groin puncture to TICI 2b-3 reperfusion was 40 minutes. Good functional outcome was achieved in 19/31 (61%). Average cost for aspiration with the 5MAX ACE alone was $4,916 per case compared with the expected $9,620 if a stent retriever was used as the primary device. Our average cost per case, including adjunctive devices, was $6,997. Two patients of 31 experienced sICH (6%), and 2/31 (6%) patients died.

Conclusion: These findings and analysis suggest that direct aspiration with a large-bore catheter, like the 5MAX ACE catheter, as first-line therapy is a very cost-effective approach to treatment of LVO and yields excellent reperfusion rates in a short amount of time. This in turn leads to good functional outcomes with minimal complications.

Characteristics	Ochsner Series	NASA Registry	MR CLEAN
Arterial puncture to reperfusion time	40 ±16 min (N=31)	77 min	***
Arterial puncture to TICI 2b-3 reperfusion time	40 ±14 min (N=26)	***	***
Post-procedure mTICI score 2b-3	84% (26/31)	72.5%	58.7%
Post-procedure mTICI score 3	61% (19/31)	40.2%	24%
Overall rescue therapy	35% (11/31)	25.7%	***
Adjunctive use of stent retrievers as rescue therapy	19% (6/31)	***	***
Mortality	6% (2/31)	30.2%	21%
Procedure related complications	10% (3/31)	***	8.6%
Symptomatic intracranial hemorrhage	6% (2/31)	9.9%	***
Extravasation	3% (1/31)	***	0.9% (2/233)
Mean discharge mRS ± SD	2.3 ± 1.8	***	***
Good functional outcome (mRS 0-2 at discharge)	61% (19/31)	42% (at 90 days)	32.6% (at 90 days)

94 Endovascular Treatment of Stroke Leads to Better Outcomes, Decreased Mortality, and Shorter Length of Stay—Single-Center Experience

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Background: Stroke severity based on the National Institutes of Health Stroke Scale/Score (NIHSS) has been described as a predictor of length of stay (LOS). Patients with large vessel occlusions (LVOs) usually present with a high NIHSS, leading to prolonged LOS as well as worse outcomes. The usefulness of neuroendovascular procedures for patients with LVOs has been much debated. We present a comparison of LOS and outcome of patients presenting with LVO strokes treated neuroendovascularly vs those who received conservative treatment, based on a 2-year (2012-2013) period in a single center (Ochsner Medical Center-New Orleans).

Methods: A total of 116 consecutive patients who had both computed tomography angiography (CTA)-confirmed intracranial LVO and computed tomography (CT) perfusion data upon arrival to our institution were retrospectively studied. Patients with hemorrhages, tandem lesions, or high-grade carotid stenosis were excluded. The decision to perform endovascular treatment was made by vascular neurologists and neurointerventionalists based on severity and CTA/perfusion data. Group 1 (n=50) underwent endovascular revascularization, while Group 2 (n=66) was treated conservatively (medical management or intravenous tissue plasminogen activator if within window). Presentation NIHSS, risk factors, mortality, discharge NIHSS, discharge modified Rankin Scale (mRS), and LOS (n=62 for Group 2) were compared. Excluded from LOS were deaths (3) and hospice discharges (1) within 24 hours of admission.

Results: There were no statistical differences in the patient population regarding age, sex, risk factors, or presentation/initial NIHSS (17.7 vs 19.6, $P=0.1236$). The groups were statistically different in discharge NIHSS (7.82 vs 18.26, $P<0.00001$), discharge mRS (2.42 vs 4.30, $P<0.00001$), mortality (8% vs 21%, $P=0.043$), and LOS (8.84 vs 10.91, $P=0.0327$).

Conclusion: Patients who presented with LVO and favorable CT perfusion and who underwent neuroendovascular reperfusion had significantly better outcomes, decreased mortality, and shorter LOS in our population, despite similar stroke severity at presentation. This study also suggests that CT perfusion imaging may be useful in selecting patients who will benefit from neuroendovascular reperfusion therapy for LVO ischemic stroke.

95 Photorefractive Keratectomy in Accommodative Esotropia

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Background: Accommodative esotropia is the most common cause of childhood onset esotropia. The underlying mechanism varies among patients, but it usually involves moderate to high degrees of hyperopia and/or a high accommodation convergence/accommodation ratio of increased medial rectus muscle tone. The present study is a retrospective analysis of a tailored treatment plan using a combination of refractive surgery and medial rectus resection in accommodative esotropia. The goal of the study was to determine if the treatment plan would make patients spectacle free with good visual acuity and alignment that persist for 6 months.

Methods: Medical records from Ochsner Medical Center from March 2013 to December 2014 were retrospectively reviewed to identify patients who had photorefractive keratectomy $\pm$ medial rectus recession. Inclusion criteria were patients with accommodative esotropia. Exclusion criteria were patients who did not have photorefractive keratectomy with medial rectus recession.

Results: Twenty charts were pulled for patients with an age range of 11-19 years. Postsurgery follow-up ranged from 1-6 months. The majority of patients remained spectacle free with good alignment. Few patients experienced minor side effects of halos, light sensitivity, and dry eyes.

Conclusion: Photorefractive surgery with medial rectus recession is a viable option for patients who want to be spectacle free. Future research will involve looking at corneal topography and performing a cost analysis of this new treatment option vs conventional methods.

96 Baerveldt Glaucoma Surgery Outcomes Study

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Background: The aim of this study was to compare the outcomes of 250 mm^2 vs 350 mm^2 Baerveldt tube implants (Abbott Medical Optics, Inc.) during a 1-year period in patients with poorly controlled glaucoma.

Methods: A retrospective chart review was performed to evaluate outcomes of Baerveldt implants in consecutively treated glaucoma patients using a single surgeon technique. Fifteen 250 mm^2 and thirteen 350 mm^2 patients with Baerveldt implants met inclusion criteria and were followed for at least 1 year with a minimum of 3 postsurgical intraocular pressure (IOP) measurements.

Results: Mean age was comparable between the two groups (62.2 vs 66 years). Mean pretreatment IOP was 27.6 mmHg (SD 9.51) in the 250 mm^2 group and 29.7 mmHg (SD 8.68) in the 350 mm^2 group. At 3 months, postoperative percent IOP (%IOP) reduction was less in the 250 mm^2 group compared to the 350 mm^2 (40% vs 55%). This relationship persisted at 1 year with a %IOP reduction of 46% in the 250 mm^2 group and 64% in the 350 mm^2 group. The difference between the 250 mm^2 and 350 mm^2 %IOP reduction from baseline at 1 year was statistically significant (*t* test, 2 tailed, $P<0.01$). The percent of patients achieving single-digit IOP was 33% in the 250 mm^2 group compared to 46% in the 350 mm^2 group.

Conclusion: In our study, both Baerveldt glaucoma surgery groups demonstrated a significant IOP drop from baseline. At 1 year, the Baerveldt 350 mm^2 implant achieved a greater %IOP reduction from baseline compared to the 250 mm^2 implant. The desire to achieve a greater %IOP reduction with the Baerveldt 350 mm^2 implant needs to be balanced against the greater likelihood of hypotony and associated complications.

97 Eight-Year Results of Articular Surface Replacement Hip Prosthesis: Primary vs Revision

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Background: This study reports outcomes of primary DePuy Articular Surface Replacement (ASR) total hip arthroplasties and revisions of this system performed by a single surgeon.

Methods: We performed a retrospective review of patients who underwent primary total hip arthroplasty or revision with the DePuy ASR system between 2006 and 2014. We evaluated revision and nonrevision groups for age, body mass index, sex, comorbidities, cup abduction, anteversion, combined angles, postoperative complications, cobalt and chromium ion levels, and Harris Hip Scores. Statistical analysis was performed using paired *t* test.

Results: During the study period, 105 patients underwent 115 primary DePuy ASR total hip arthroplasties. Thirty-six patients underwent 40 revisions. There were no significant differences in patient demographics, medical comorbidities, or preoperative Harris Hip Scores (Table). Average follow-up was 4.93 years. Revisions had higher average cup abduction angles (47.8 vs 42.4, $P=0.005$), smaller average cup sizes (53.3 vs. 55.2, $P=0.003$), smaller average femoral component sizes (4.7 vs 5.6, $P=0.02$), and lower postoperative Harris Hip Scores (87.9 vs 93.8, $P=0.0007$). Revisions had higher cobalt (34.5 vs 5.8, $P=0.00003$) and chromium levels (14.0 vs 1.3, $P=0.00003$). Females were more likely to undergo revision ($P=0.0002$). Five postoperative complications occurred in the revision group vs 1 in the nonrevision group ($P=0.01$). Harris Hip Scores for revision surgeries increased from a mean of 44.2 preoperatively to 74.9 ($P=1.45\times10^{-5}$) postoperatively.

Conclusion: To our knowledge, this is the largest single-surgeon study in the literature. Hips requiring revision had significantly higher cup abduction angles, smaller cup and femoral component sizes, lower postoperative Harris Hip scores, and higher metal ion levels, and patients were more likely to be female.

Table 1		Primary	Revision	p-Value
Age (years)		56.41	52.79	0.09
Body Mass Index (BMI)		31.55	31.37	0.89
ASA Score		2.37	2.25	0.31
Sex (%)				0.0002*
	Male	82.6	50	
	Female	17.4	50	
Comorbidities (%)	HTN	55.1	50	0.62
	DM	15.9	13.9	0.69
	CAD	14.4	2.8	0.06
	Smoking	23.2	19.4	0.74
Primary THA Preop HHS		43.93	47.3	0.29
Primary THA Postop HHS		93.78	87.87	0.0007*
Complications		1	5	0.01*

ASA= American Society of Anesthesiologists

*=Significant

98 Clinical Outcomes of Hip Arthroscopy with Administration of Platelet-Rich Plasma

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Background: There is no consensus as to whether platelet-rich plasma (PRP) administration during hip arthroscopy has beneficial effects on outcome. Successful treatment of hip labral or chondral injuries is dependent on host healing response. The growth factors in PRP have been shown to promote tissue repair and healing.

Methods: A retrospective review was conducted comparing 45 patients with PRP administration during hip arthroscopy to 40 patients with no PRP administration during hip arthroscopy. Visual analog scale (VAS) scores, Harris Hip Scores (HHS), International Hip Outcome Tool (IHOT) scores, and SF-12 scores were obtained at postoperative follow-up visits at 6 weeks, 3 months, 6 months, and 1 year.

Results: Clinical outcomes of the PRP group and non-PRP group were not significant when comparing the VAS and IHOT scores and the HHS. The PRP group had improved HHS at all follow-up visits (79.8 vs 78.6, 86.1 vs 84.3, 92.1 vs 90.0, and 95.6 vs 94.8). Significant differences were found at all follow-up visits in SF-12 scores. The mental SF-12 was superior for the PRP group at all visits (50.1 vs 40.5, 53.8 vs 45.1, 55.1 vs 51.1, 55.6 vs 51.1), while the physical SF-12 was superior for the non-PRP group at all visits (42.9 vs 53.7, 44.9 vs 56.6, 47.3 vs 57.7, 52.2 vs 57.5).

Conclusion: Administration of PRP during hip arthroscopy did not have a clinical effect on VAS and IHOT scores or on HHS, supporting prior studies. However, the superior results in the mental section of the SF-12 may show that patients who have PRP administration develop a placebo effect of feeling that PRP improves outcome, while in actuality it may not have a positive effect on healing and physical outcome.

Fellowship program sponsored by funding from Smith & Nephew, ConMed Linvatec, Breg, Inc., Butcher & Associates, Inc., Arthrex, Inc., and Össur Americas.

99 Comparison Between Perioperative Local Anesthetic Pain Protocols for Hip Arthroscopy

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Background: Numerous procedures and protocols are performed in the ambulatory setting, necessitating appropriate perioperative local anesthesia for postoperative pain control. There is no consensus on perioperative anesthesia for hip arthroscopy.

Methods: A retrospective review was conducted of 30 hip arthroscopy patients in the postoperative setting. Group A (n=6) received portal site injections of ropivacaine, ketorolac (Toradol), and morphine at the beginning and end of the procedure, in addition to injection into the hip joint. Group B (n=24) received portal site and hip joint injections only at the end of the procedure. Visual analog scale (VAS) pain scores were noted upon arrival to the PACU, at 30 minutes and 2 hours postarrival, and at the time of discharge.

Results: No statistically significant differences in patient VAS scores were noted at any documented time interval. However, when comparing pain scores at arrival to the PACU and at 30 minutes postarrival, Group A had improved VAS pain scores (Group A VAS score 4.8 vs Group B VAS score 5.8 at PACU arrival, and Group A VAS score 4.3 vs Group B VAS score 5.54 at 30 minutes postarrival).

Conclusion: With the small sample size, it is promising that a local anesthetic regimen of injection of medications in the portal sites at the beginning and the end of the procedure, in addition to the hip joint, may have beneficial effects on pain scores. Decreased pain scores may lead to decreased narcotic intake and increased patient comfort during the short-term postoperative phase of treatment and allow for more efficient rehabilitation. A larger sample size will be needed for further investigation.

Fellowship program sponsored by funding from Smith & Nephew, ConMed Linvatec, Breg, Inc., Butcher & Associates, Inc., Arthrex, Inc., and Össur Americas.

100 Comparison of Ocular Radiation Exposure Utilizing Three Types of Leaded Glasses

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Background: We evaluated the efficacy of three types of leaded eyeglasses during typical views of minimally invasive spinal surgery to determine the efficacy of ocular protection from radiation.

Methods: Utilizing anthropomorphic phantoms, radiation exposure to the lens of the surgeon phantom was measured. Four groups were analyzed: no glasses (NO), lead lens without leaded sides (WOLS), lead lens with lead sides (WLS), and sport wraparound leaded glasses (Sport). Fifteen individual, 20-second exposures in the anteroposterior (AP) and lateral x-ray positions with phantom head positions at 0, 45, and 90 degrees were performed. All glasses were 0.75 mm lead equivalent. Radiation dose was measured using a solid-state dosimeter (Unfors EDD-30; Billdal, Sweden). Average radiation dose for each position, total radiation dose, and percent reduction to the lens was calculated for each pair of glasses. Student *t* test was used to calculate significance.

Results: All three glasses (WOLS, WLS, Sport) had significant reductions in ocular radiation vs no glasses at all positions. Sport had a significantly lower ocular radiation dose than WLS at all positions except at 90 degrees AP. Sport also had a significantly lower ocular radiation dose than WOLS in all cases except 0 degrees AP and 90 degrees lateral. WOLS had a significantly lower radiation dose at all positions over WLS except at 45 degrees AP. All glasses resulted in a significant reduction in total radiation dose from all views over no glasses ($P < 8.37 \times 10^{-32}$). Both Sport and WOLS were significantly lower than WLS ($P=0.009$ and 0.003, respectively).

Conclusion: Our study demonstrates a significant reduction in radiation exposure to the eye with all three leaded glasses. We show leaded glasses with lead sides (WLS) may have adverse effects by possibly trapping radiation and increasing ocular radiation exposure.

101 Topical Tranexamic Acid Use in Knee Periprosthetic Joint Infection Is Safe and Effective

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Background: Tranexamic acid (TXA) has been shown to decrease hemoglobin loss and reduce the need for transfusions in primary hip and knee arthroplasty. The purpose of our study was to evaluate the safety and efficacy of topical TXA in revision total knee arthroplasty (TKA) for periprosthetic joint infection (PJI).

Methods: We performed a retrospective review of all patients who underwent removal of hardware with antibiotic spacer placement (Stage 1) and/or revision TKA (Stage 2) for PJI of the knee at our institution from September 2007 to July 2013. During the study period, 45 patients underwent 49 Stage 1 procedures (20 knees with TXA, 29 without) and 44 patients underwent 47 Stage 2 revisions (28 with TXA, 19 without). We evaluated hemoglobin loss, need for transfusion, 1-year reinfection rate, length of stay (LOS), complications, and 1-year mortality with and without the use of TXA in these patients. All data sets were analyzed with a two-sample *t* test.

Results: TXA use significantly decreased hemoglobin loss in Stage 1 surgeries (19.8% vs 30.05%, $P=0.0004$) and Stage 2 revisions (24.5% vs 32.01%, $P=0.01$). In both groups, TXA use was associated with a significant reduction in transfusion rates (Stage 1, 25% vs 51.7%, $P=0.04$; Stage 2, 25% vs 52.6%, $P=0.05$). There was a nonstatistical decreased LOS in both groups (Stage 1, 5.15 vs 6.72 days, $P=0.055$; Stage 2, 5.21 vs 6.84 days, $P=0.09$). There was no difference in 1-year reinfection rate ($P=0.98$) or 1-year mortality between groups (0 vs 0). A single upper extremity deep vein thrombosis occurred in a Stage 1 patient who received TXA, and no pulmonary embolisms occurred.

Conclusion: Our study proves that topical TXA is both safe and effective for use in both stages of revision TKA for PJI.

102 A Long Journey to Zero CLABSI

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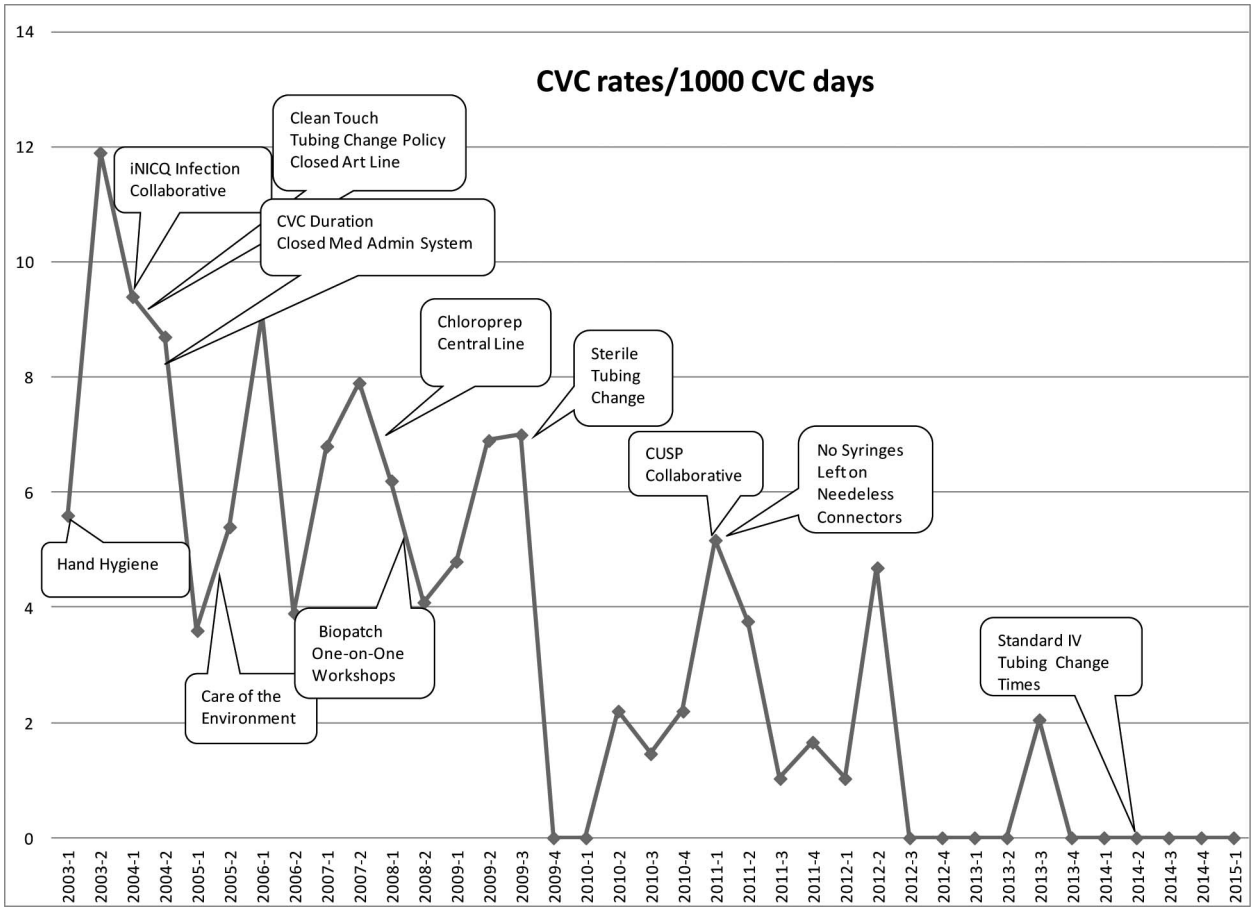
Background: Strong evidence supports the standardization of multicomponent intervention bundles to reduce healthcare-acquired infections; however, sustaining compliance can be challenging. The goal of this project was to implement/sustain a customized central line–associated blood stream infection (CLABSI) prevention program to achieve zero CLABSIs in our Level III Regional Neonatal Intensive Care Unit (NICU).

Methods: Starting in 2003, rapid Plan-Do-Study-Act cycles drove the following best practices: standard intravenous (IV) tubing configuration and medication administration system, sterile IV tubing change, and scrub the hub prior to central line access. The staff was educated on the best practices using one-on-one sessions and yearly competency validations. By 2009, CLABSI rates decreased to zero for 2 months, but the improvement was not sustained. In 2011, the unit participated in the national collaborative On The CUSP (Comprehensive Unit-Based Safety Program): Stop BSI. The unit CUSP leaders worked with an interprofessional team to create a customized central line dressing kit and an insertion checklist. Using daily huddles, daily rounds, and parent education, the CUSP leaders were able to drive compliance with best practices for central line management except for hand hygiene. After moving from an open bay unit to the new, primarily private room NICU, the staff needed to be reeducated on the use of alcohol rubs before and after private and/or semiprivate room entry.

Results: Compliance with hand hygiene continues to improve. By the 3rd quarter of 2012, the CLABSI rate dropped to zero and has been sustained for 18 months except for 2 occurrences.

Conclusion: Key drivers of success were the interprofessional commitment to sustain best practices using the CUSP safety initiative, continuous staff education, and monthly auditing of CLABSI bundle compliance.



103 Smoking Cessation Trust Program of Louisiana: The Pediatrician's Role in Identifying and Referring Eligible Patients

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Background: Secondhand tobacco smoke affects 40% of children. Children who are exposed are at increased risk for significant morbidity, including a 30% increase in the risk of cardiovascular disease. It is imperative that caregivers do not smoke around children. Because caregivers visit the pediatrician more often than their primary care provider, pediatricians are in a unique position to screen, counsel, and refer. Smoking cessation programs have been shown to increase the rate of success in those who wish to quit. Not all caregivers, however, have knowledge of or access to smoking-cessation programs. Currently, the Smoking Cessation Trust (SCT) program of Louisiana is available to anyone who began smoking prior to 1988.We undertook a pilot study to assess the age of caregivers to determine if they were eligible for participation in the SCT. Various factors of the population were assessed to better understand the demographics of this group.

Methods: The study population consisted of pediatric patients' caregivers who visit Ochsner for Children. Caregivers were offered a questionnaire to assess their age, gender, relationship to the child, medical insurance, smoking status, and cessation attempts. Data for 3 other caregivers were also ascertained. Data were entered into a computerized database/spreadsheet for analysis using Statistical Analysis Software (SAS).

Results: Twenty-nine questionnaires were administered that assessed 84 caregivers. Of those caregivers, 31% smoked, 44% of whom began smoking before 1988, making them eligible for the SCT. Eligible caregivers included grandmothers (33%), grandfathers (16%), and fathers (25%). In the last 12 months, 25% of SCT-eligible caregivers tried quitting, and 8% used medication to aid in this attempt.

Conclusion: Secondhand smoke continues to be a significant problem in the pediatric population. Many of the caregivers visiting the pediatrician's office are eligible for the SCT. Pediatricians should make every effort to refer eligible smokers.

104 Decreasing Unplanned Extubations in the Pediatric Intensive Care Unit

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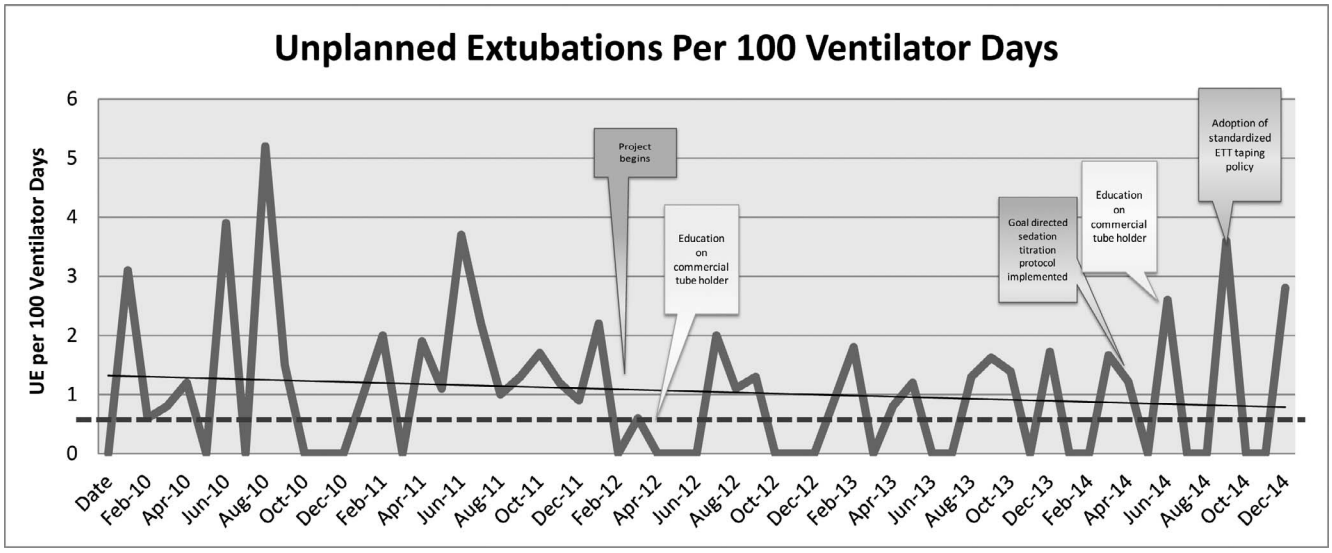
Background: Unplanned extubation (UE) is a serious adverse event that has the potential to cause severe hypoxia, increased risk of infection, airway trauma, prolonged mechanical ventilation, and increased length of stay. Identified risk factors for UE include younger age, agitation/delirium, inadequate tube fixation, weaning from mechanical ventilation, bedside procedures, and high patient/nurse ratio. The rates of UE extubation in the pediatric population range from 0.11-6.4 events/100 ventilator days. The purpose of this project was to decrease UE in the pediatric intensive care unit to below 1 occurrence/100 ventilator days using evidence-based strategies.

Methods: Using Plan-Do-Study-Act methodology, the following cycles for change were implemented over a 2-year timeline: education on proper sizing and application of commercial tube holder, root-cause analysis of each UE that revealed 2 commonalities (undersedation and improper securement) that were consistent with previous literature, leader bedside rounding on security of the endotracheal tube, implementation of a sedation-titration protocol to give bedside nurses greater autonomy in determining treatment for agitation, consultation with pediatric units with low UE rates to explore strategies of implementing best practices, standardization, and staff education on the method to secure endotracheal tubes. Retrospective data were used to track the UE rates preimplementation and post-implementation of evidence-based interventions.

Results: Since project inception, the UE rate decreased from 1.4/100 ventilator days to 0.8/100 ventilator days with the implementation of evidence-based strategies.

Conclusion: Through the implementation of an interprofessional quality improvement program, it is possible to reduce the incidence of UE adverse events. Ongoing monitoring and analysis will be essential to maintaining these low UE rates.



105 Exploring Parental Stress Associated with NICU Design

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Background: The parental experience in the neonatal intensive care unit (NICU) is stressful. Science links parental stress to sleep disturbance and depression. The redesign of the NICU from open bay (OB) to private rooms (PR) has the potential to reduce parental stress. The purpose of this study was to assess perceived parental stress in OB vs PR NICUs.

Methods: A participation invitation was mailed to a convenience sample of parents from OB and PR NICUs. The invitation included study purpose, web link to the survey, and human subject protection information. The 35-item survey included 8 demographic questions and the Parental Stressor Scale-NICU (PSS-NICU). The 27-item PSS-NICU uses a 5-point Likert response scale and has 3 subscales: sights/sounds (5 items), infant appearance/behavior (14 items), and parental role (7 items). An open-ended question is at the end of the survey. The total scale and each subscale were summed. Descriptive statistical summaries were used to assess demographics and PSS-NICU total/subscales scores. Independent *t* tests assessed PSS-NICU score differences. Pearson correlations assessed the relationship of parental stress with unit design.

Results: Forty-nine surveys were completed (OB=23, PR=26). The majority were mothers (48/49), aged 30.6 $\pm$ 4.7, infant gestation 36.6 $\pm$ 3.7 (OB) vs 34.4 $\pm$ 4.2 (PR), and infant length of stay 12 days OB vs 14 days PR. Number of times visited/week was 7 for both groups. There were no statistically significant differences in the PSS-NICU total scores (t=0.69, df=47, P=0.497), sights/sounds (t=0.82, df=47, P=0.419), and infant appearance (t=–0.22, df=47, P=0.826). However, statistically significant differences were observed in parental role scores (t=2.32, df=47, P=0.260). The OB NICU was negatively correlated with constant noises (r=–0.428, P=0.006), caring for baby myself (r=–0.401, P=0.11), and having time alone with baby (r=–0.318, P=0.048).

Conclusion: Parents in the OB group reported more stress in the parental role. Specific stressors included constant noise and not being able to care for their infant and/or spend time with their infant.

106 Relationships Among Maternal Stress and Immune Components of Mothers' Milk

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107 Etiology of Thrombosis in Children: An Institutional Study

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Background: Thromboembolism (TE) is a rare event in childhood, occurring less frequently than in adults but associated with morbidity and mortality. TE has been increasing due to aggressive therapeutic approaches, including the increased use of central venous catheters and the improved survival rates of children.

Methods: ICD-9 codes were used to identify all patients aged 0-21 years admitted between July 1, 2009 and September 31, 2013 who were diagnosed with a thromboembolic event during their treatment stay. Currently, 117 of the 340 identified patients have been reviewed, with 49 identified as meeting study parameters.

Results: Each of the 49 identified patients had at least one thromboembolic event. The primary etiologies of the 49 cases are as follows: 13 cases (26.5%) were due to a complication of a general medical illness or an unknown cause, 11 cases (22.4%) were related to central venous catheterization or peripheral intravenous line insertion, 11 cases (22.4%) were related to surgical procedures, 7 cases (14.3%) resulted from congenital heart defects, 4 cases (8.2%) were related to a hormone imbalance (prolonged OCP exposure, pregnancy), and 3 cases (6.1%) were attributed to an infective process. Risks associated with the development of thromboembolism formation included age (44.9% of study patients were $<$1 year old) and male sex. Other risk factors were immobility (17 cases), dehydration (1 case), perinatal asphyxia (2 cases), maternal diabetes (3 cases), and secondhand smoke exposure (4 cases).

Conclusion: When this study is completed, a clear picture of initiating factors will allow for the development of educational and preventive therapeutic guidelines to help decrease the incidence and morbidity of thrombosis in this institution's pediatric population.

108 Effectiveness of Pharmacist-Managed Medication History, Reconciliation, and Discharge Counseling in an Inpatient Setting to Decrease Hospital Readmission

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Background: The objective of this study was to evaluate the effectiveness of a pharmacy-driven medication reconciliation intervention in decreasing hospital readmission rates for internal medicine patients. Methods to reduce hospital readmission have become increasingly important, as the Centers for Medicare and Medicaid Services now penalizes hospitals with excess 30-day readmissions for myocardial infarction, pneumonia, and heart failure.

Methods: We conducted a single-center observational cohort study in which patients admitted to medicine teams 3 and 5 at Ochsner Medical Center received a pharmacy intervention consisting of 4 components: medication history at admission, medication reconciliation at admission, medication reconciliation at discharge, and discharge counseling. The intervention group was compared to a control group consisting of patients admitted to medicine teams 1 and 2 that had no direct pharmacy involvement in medication history, reconciliation, and discharge. Primary and secondary outcomes were 30-day and 60-day readmission to Ochsner hospitals, respectively.

Results: An initial power calculation found 8,572 patients were needed to detect a reduction of 1.6% in readmission at 80% power. A total of 328 patients were included for analysis after meeting inclusion criteria. No significant differences between groups were found with the exception of greater baseline hypertension in the intervention group (118 [62.1%] vs 113 [73.9%], $P=0.02$). Overall, the pharmacy intervention resulted in nonsignificant reductions of 4.73% in 30-day readmission ($P=0.31$) and 4.2% in 60-day readmission ($P=0.43$).

Conclusion: Reductions in readmission were greater than anticipated, although likely nonsignificant because our study was underpowered because of the limitations of time. Our study argues for greater pharmacy involvement in medication reconciliation and extension of such studies to include a greater number of patients.

109 Evaluation of Pharmacist-Managed Warfarin Anticoagulation vs Usual Medical Care

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Background: Pharmacist-directed anticoagulation clinics have been around for decades with proven value that drives down healthcare costs. Ochsner Health System currently has 2 models to monitor anticoagulation: a usual medical care clinic (nursing/physician managed) located at Ochsner Medical Center-Baton Rouge (OMC-BR) and a pharmacist-managed care clinic located at Ochsner Medical Center-New Orleans. The effectiveness of anticoagulation therapy with warfarin is dependent on the ability of the healthcare professional to maintain a patient within his/her respective goal international normalized ratio (INR). The purpose of this study was to assess the anticoagulation outcomes of pharmacist-directed care in comparison to physician-directed care.

Methods: This single-center, retrospective chart review was conducted from January 1, 2014 through August 30, 2014. The primary endpoint was to evaluate time in therapeutic range. Secondary endpoints included time in extended therapeutic range (± 0.3), time to therapeutic range, time to extended therapeutic range, and adverse drug reactions. Patients had to be at least 18 years of age and had to have ≥ 3 recorded INR readings. Patients were excluded if they were expected to be on warfarin for <30 days and/or adverse events were unrelated to anticoagulation.

Results: Sixty patients were included in this retrospective cohort study. The median age was 65 years of age among nursing/physician-managed patients and 66 years of age among pharmacist-managed patients. Nursing/physician-managed patients had a larger percentage of males, used more tobacco, and had higher average weekly warfarin dosing. Average time to therapeutic INR was 15.8 days and 25 days for pharmacist- and nursing/physician-run clinics, respectively. In addition, pharmacist-run clinic patient time in therapeutic range was 61 days compared to 53.8 days in the nursing/physician-run clinic patients.

Conclusion: Time to therapeutic INR, time within range, time to extended therapeutic range, and time within extended range were improved with the pharmacist-managed clinic in comparison to usual medical care.

110 Evaluation of Appropriateness of Meropenem Use at a Tertiary Care Hospital

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Background: Meropenem has broad-spectrum coverage and increased stability against extended-spectrum beta-lactamases; therefore, its use has been increasing in patients with suspected infection. Consequently, higher rates of multidrug-resistant gram-negative bacteria (MDR-GN), including carbapenem-resistant organisms (CRO), are being reported. The purpose of this study was to evaluate meropenem utilization at Ochsner Medical Center-New Orleans both as empiric and definitive antibiotic therapy.

Methods: This retrospective review included patients >18 years of age who received at least one dose of meropenem between April 1, 2014 and June 30, 2014. Inappropriate empiric therapy was defined as nonsevere infection with 0-1 multidrug-resistant (MDR) risk factors and/or severe infection with 0 MDR risk factors. Inappropriate definitive therapy was defined as no infection with >24 hours of therapy, gram-positive infection with >3 days of therapy, gram-negative infection sensitive to narrower agent or resistant to meropenem with >3 days of therapy, and/or negative cultures and clinical improvement with >5 days of therapy.

Results: This evaluation included 133 patients. Their median age was 64 years, and most patients were admitted to the intensive care unit (ICU) (68%). Cultures were obtained within 24 hours of initiation of meropenem in 67% of patients; 45% were positive. Of the gram-negative isolates (n=40), most were either sensitive to narrower agents (75%) or resistant to meropenem (23%). The overall rate of inappropriate meropenem use was about 48% for both empiric and definitive therapy. The rate of both subsequent CROs and *Clostridium difficile* infections within 90 days was 5%. Subgroup analyses of patients admitted to the ICU and patients without penicillin allergies demonstrated similar rates of inappropriate empiric and definitive meropenem use.

Conclusion: Only half of the meropenem use between April 1, 2014 and June 30, 2014 at Ochsner Medical Center-New Orleans was appropriate.

111 Post–Liver Transplant Delirium Is Associated with Increased Mortality and Prolonged Length of Stay

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Background: Delirium after liver transplantation has been reported to increase intensive care unit and hospital length of stay, but limited information is available regarding to incidence, potential risk factors, and associated outcomes.

Methods: This is a single-center, retrospective cohort study of adult patients who received a deceased liver transplantation from October 1, 2012 to March 31, 2014. Patients with delirium were identified by having received 3 consecutive doses of an antipsychotic medication posttransplant after acute mental status change.

Results: Of 181 patients included in the study, 38 (20.9%) developed delirium after a mean of 6.9 days (interquartile range 4-8 days). Univariate analysis showed risk factors associated with developing delirium that included history of depression (52.6% vs 32.2%, *P*=0.02), previous hospital admission for encephalopathy (36.8% vs 16.8%, *P*=0.01), hospitalization at the time of transplant offer (55.3% vs 23.1%, *P*=0.0002), higher Model for End-Stage Liver Disease (MELD) score (25.01 vs 19.25, *P*=0.0025), and a greater number of infusions of packed red blood cells during liver transplantation (7.9 vs 3.5, *P*=0.009). After multivariate analysis, factors associated with an increased odds ratio (OR) for developing delirium included pretransplant use of antidepressants (OR 3.34; 95% confidence interval [CI], 1.29-8.70) and pretransplant hospital admission for encephalopathy (OR 4.39; 95% CI, 1.77-10.9). Patients with delirium spent more time in mechanical ventilation (1.99 vs 1.28 days, *P*=0.0075) and had longer mean intensive care unit length of stay (4.58 vs 2.65 days, *P*=0.0082), longer mean hospital length of stay (27.61 vs 11.17 days, *P*=0.0027), and higher 6-month mortality (13.2% vs 1.4%, *P*=0.003).

Conclusion: Presence of delirium is common after liver transplantation and is associated with high morbidity and mortality within the first 6 months posttransplant. Efforts should be made to identify patients at risk for delirium as protocol-based management may improve outcomes.

112 Frequency and Timing of Readmissions Among Survivors of Severe Sepsis and Septic Shock

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Background: The incidence of sepsis continues to rise and has a cost estimate of approximately $17 billion per year. With survival improving during the last decade, little is known regarding readmission rates and risk factors for readmission. We analyzed the all-cause readmission rates for patients who survived severe sepsis/septic shock (SS/SH) and their risk factors for readmission.

Methods: This study was a retrospective chart review of 990 patients as part of a tertiary academic medical center's quality improvement project for SS/SH from 2008-2012. All patients received a standardized early goal-directed therapy resuscitation protocol. A logistic regression analysis was performed to evaluate age, Acute Physiology and Chronic Health Evaluation II (APACHE II), and perfect process of care (PC) according to the quality improvement project. Readmission was assessed for each individual patient at 0-60 days, 60-90 days, 90-180 days, 180-365 days, and 545 days.

Results: Of unique patients who survived SS/SH, 28 (2.8%) were readmitted within 60 days of discharge, 37 (3.7%) within 180 days, 49 (4.9%) within 365 days, and 56 (5.6%) within 545 days of discharge. Some patients were readmitted more than once for a total of 125 readmissions with a range of 2-5 admissions. The odds ratio (OR) for readmission in patients who did not receive PC was 1.076 (confidence interval [CI], 0.613-1.890). The OR for readmission for higher APACHE II scores was 1.02 (CI, 0.98-1.06). The readmission OR for older patients was 0.98 (CI, 0.98-1.01).

Conclusion: The 18-month readmission rate for patients who survive SS/SH is low, with the majority of patients being readmitted in the first 180 days. We did not find a correlation with readmission with regards to age, APACHE II scores, or PC. Further studies are needed to evaluate other risk factors associated with readmission, in particular for those patients who are at risk for recurrent readmissions.

113 Implementation Science and Critical Care Quality: TeamSTEPPS, Tele-ICU, and Technology

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Background: Critical care units manage acutely ill patients in a stressful and high-risk environment. Studies suggest that only about 50% of critical care patients receive evidence-based care, and adverse events are often related to teamwork and communication breakdowns. Positive outcomes related to teamwork include decreased length of stay, mortality, and readmissions. During the past 5 years, the Critical Care Service has worked with interdisciplinary partners to create a healthy work environment using the Comprehensive Unit-Based Safety Program (CUSP), TeamSTEPPS, Tele-ICU, and rapid change cycles to enhance patient care. The purpose of this project was to combine TeamSTEPPS essential elements with performance improvement (PI) and implementation science methodology to enhance clinical outcomes.

Methods: Unit leadership and CUSP teams were created, targeted education and structured processes were put in place to hardwire desired care practices, and interdisciplinary team training was provided annually. Examples of specific practices include insertion and maintenance care of central lines, catheters, and airways. Quality and safety were measured using unit-based and hospital-wide surveys. Routine PI data were collected and evaluated for improvement opportunities.

Results: There has been a gradual decrease in the utilization rates of devices on the Critical Care Service during the past 12 months: central lines 0.57 to 0.26, Foley catheters 0.61 to 0.26, and airways 0.35 to 0.18. Additionally, use of evidence-based practices has resulted in decreased infection rates in all groups. Teamwork continues in line with national benchmarks for critical care units.

Conclusion: Culture change is a slow process, but combining technology evidence-based practices and team science has the ability to decrease variation in practice, eliminate waste, and improve clinical outcomes.

114 Clinical Outcome Predictors in Mechanical Thrombectomy Candidates

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115 Incorporating Continuing Medical Education in Quality Improvement: Compliance with Grading Intraventricular Hemorrhage in Radiology Reports

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Background: Standardized reporting is one method to obtain consistency in radiologic interpretation. Continuing medical education (CME) can be used to address practice gaps identified in radiology reporting.

Methods: As part of the quality improvement program in the Radiology Department of Ochsner Health System, a practice gap was identified in the radiology reports of cranial ultrasounds of premature infants in the neonatal intensive care unit (NICU). Specifically, there was not consistent reporting using the nomenclature for the grading system of germinal matrix hemorrhage (GMH) developed by Papile et al (Papile LA, Burstein J, Burstein R, Koffer H. Incidence and evolution of subependymal and intraventricular hemorrhage: a study of infants with birth weights less than 1,500 gm. *J Pediatr*. 1978 Apr;92(4):529-541). Using the Plan-Do-Study-Act cycle methodology for quality improvement, we performed a retrospective analysis of 395 neonatal cranial ultrasound reports from January-September 2014, yielding 122 reports that indicated the presence of GMH. A CME program for all radiologists in the department was developed and presented, including a didactic lecture and distribution of PowerPoint slides via email for easy reference. The appearance of common pathologic conditions on cranial ultrasound was reviewed, with emphasis on the grading system of GMH. Reporting compliance was again evaluated in 208 reports of cases performed subsequent to the CME activity through February 2015. These reports indicated the presence of GMH in 52 cases.

Results: Prior to the CME intervention, only 48% (58 of 122) of the radiology reports noting neonatal GMH included nomenclature indicating the grade of the hemorrhage. Following the CME activity, compliance with reporting the grade of the GMH improved to 96% (50 of 52).

Conclusion: Intervention with CME can be used to address practice gaps and improve the performance of physicians in practice, in particular to address the compliance of radiologists with standardized reporting and nomenclature.

116 Pressures Obtained During Transjugular Liver Biopsy Predict Cirrhosis

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Background: Ochsner performs more than 200 transjugular liver biopsies annually, during which pressures are routinely measured. However, the role of these pressures in clinical management remains unclear. Consequently, we performed a retrospective study investigating the relationship between transjugular liver biopsy pressures and clinical outcomes.

Methods: We included transjugular liver biopsies performed at our institution between 2009 and 2012 (n=424 biopsies). Free hepatic pressure (FHP) and hepatic wedge pressure (HWP) were transduced, and transhepatic gradient (THG) was calculated (HWP-FHP). The clinical outcome investigated was cirrhosis, as defined by histopathology of biopsy, scored as Scheuer stage 4 or 3-4 fibrosis. Threshold clinical parameters for predicting cirrhosis were established for HWP and THG using receiver-operating characteristic analysis. Subgroup analysis was performed on the 2 patient populations (liver transplant n=313, non-liver transplant n=111).

Results: HWP $\leq$25.5 and THG $\leq$6.5 have 96% negative predictive value for cirrhosis in liver transplant patients (Table). HWP $>$25.5 has 84% specificity for cirrhosis in liver transplant patients. In the non-liver transplant subgroup, THG $>$8.5 has 85% positive predictive value for cirrhosis, and THG $\leq$8.5 has a 71% negative predictive value for cirrhosis. THG $>$8.5 is 87% specific for cirrhosis in non-liver transplant patients.

Conclusion: Our data suggest that pressures measured during transjugular liver biopsies are able to reliably and accurately rule out cirrhosis in liver transplant patients. Moreover, our study establishes a clinically relevant threshold of 6.5 for THG and 25.5 for HWP for cirrhosis in liver transplant patients. In non-liver transplant patients, our data suggest that elevated THG as measured during transjugular liver biopsies is able to accurately and precisely predict cirrhosis. Moreover, our study establishes a clinically relevant threshold for THG of 8.5 for cirrhosis in non-liver transplant patients.

Prediction of Cirrhosis by Transjugular Intrahepatic Pressure Measurement

		Area Under ROC Curve	Diagnostic Threshold Pressure (mmHg)	Sensitivity	Specificity	Likelihood Ratio	PPV	NPV
Transplant Patients	Wedge Pressure	0.66	>25.5	0.54	0.84	3.39	0.19	0.96
	Transhepatic Gradient	0.67	>6.5	0.62	0.75	2.48	0.14	0.96
Non-Transplant Patients	Wedge Pressure	0.72	>25.5	0.52	0.74	2.06	0.70	0.58
	Transhepatic Gradient	0.82	>8.5	0.67	0.87	5.28	0.85	0.71

117 Smart Phrase Improves Reporting of Physician Quality Reporting System Measures for Back Pain

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Background: Low back pain is a common complaint in the general population and accounts for 2.5% of all outpatient office visits. Medicare has established Physician Quality Reporting System (PQRS) guidelines for back pain. An incentive is given to clinicians who successfully report on the 4 PQRS measures for a minimum of 50%-80% of applicable Medicare Part B fee-for-service patients. Clinicians not compliant with reporting will receive a service penalty applied to the next calendar year. Electronic medical records (EMR) are promoted as tools for performance improvement. We created a standard template for documentation (smart phrase) to facilitate physician documentation and improve compliance with PQRS measures reporting.

Methods: We initiated a performance improvement project by retrospectively reviewing 115 charts for Medicare PQRS measures for back pain. The four PQRS measures assessed included initial comprehensive assessment, physical examination, advice for normal activities, and advice against bed rest. Baseline data were obtained. The intervention was the creation of a smart phrase that embeds the required PQRS measures into the clinic note. Subsequently, another retrospective review of 92 charts was performed to see if the smart phrase improved reporting.

Results: Overall preintervention reporting of the comprehensive initial assessment was 23.3%, of the physical exam was 27.5%, of advice for normal activity was 23.95%, and of advice against bed rest was 3.61%. Postintervention, reporting of the comprehensive initial assessment was 29.16%, physical exam 26.04%, advice for normal activity 39.4%, and advice against bed rest 34.4%. The smart phrase was used in 14.7% of back pain visits.

Conclusion: The smart phrase was not widely used among clinicians, but its implementation corresponded to improved physician reporting of 3 of 4 required back pain measures. More physician education on the availability of the smart phrase may increase use and subsequently increase PQRS back pain measure reporting and compliance.

118 ECMO: Truly a Team Approach!

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Background: Extracorporeal membrane oxygenation (ECMO) is a therapeutic option increasingly used to manage patients with cardiorespiratory failure that is refractory to maximal conventional treatment. This support may facilitate therapeutic intervention or bridge to recovery, to a long-term support device, to heart or lung transplantation, or to palliation.

Methods: We reviewed single institution data (Ochsner Medical Center-New Orleans) for adult patients treated with ECMO (VA or VV ECMO) from 1995 to February 2015.

Results: Data were obtained from the Extracorporeal Life Support Organization (ELSO) Registry and are shown in the Table. Our institutional results for VV ECMO are comparable, while our VA ECMO results are better than the ELSO registry data. Due to the lack of an integrated approach, missing clinical practice guidelines, and lack of a point person, poor outcomes were seen. However, multidisciplinary selection processes, proper patient selection, and adherence to protocols have led to improvement in survival and patient safety. Challenges included lack of infrastructure for proper training and education for ECMO providers and the absence of an ECMO manager. This is now being remedied by onsite didactic and hands-on training sessions for the respiratory therapists, enabling them to become ECMO specialists, and the recruitment of a full-time ECMO manager. Clinical practice guidelines and protocols have been prepared to enable safe utilization of these resource-intensive therapies.

Conclusion: An integrated team approach and better utilization of services under a central leadership impacts patient outcomes. We owe this to our patients, and in the current era of outcome- and value-based reimbursement, this approach could significantly impact the future care of our patients and our ability to be competitive with the other healthcare institutions.

Veno-Arterial ECMO	**1995-2012**	**2013-2015**
Number of Patients	4	10
Successful Wean	0	8
Percentage Wean	0%	80%
Veno-Veno ECMO	**2003-2012**	**2013-2015**
Number of Patients	10	5
Successful Wean	1	3
Percentage Wean	10%	60%

119 Minimally Invasive Impella 5.0 via the Right Subclavian Artery Cutdown for Acute on Chronic Decompensated Heart Failure as a Bridge to Decision

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Background: Novel approaches, such as minimally invasive left ventricular assist device (LVAD) therapy (Impella 5.0 device), promise less invasive but equivalent hemodynamic support. However, it is unknown whether outcomes with such devices support widespread acceptance of this new technology. We recently began to use the right subclavian artery (RSA) for Impella 5.0 implantation and here report our early experience and outcomes with this approach.

Methods: A single-center retrospective review was performed of 24 patients with acute on chronic decompensated heart failure who received the Impella 5.0 via the RSA from June 2011 to May 2014. The device was implanted via a cutdown through an 8 mm vascular graft sewn to the RSA.

Results: Mean age of patients was 51.29 years, and 75% were male. At implantation, all patients were mechanically ventilated on at least two inotropes with persistent cardiogenic shock, and 17 (70.83%) were on intraaortic balloon pump (IABP) support. Postimplantation, 21 (87.50%) tolerated extubation, and all 17 tolerated discontinuation of IABP support. There was a significant reduction in the Model for End-Stage Liver Disease (MELD) score preimplantation vs postimplantation (21.17 vs 14.88, $P=0.0014$), suggesting improvement in end organ function. There was also a significant decrease in creatinine levels before and after implantation (2.17 vs 1.50, $P=0.0043$). The endpoint of support included recovery in 6 (25%) patients, permanent LVAD in 9 (37.50%), and heart transplantation in 2 (8.33%). Death occurred in 7 (29.16%) due to multisystem organ failure, infection, or family withdrawal of care.

Conclusion: Minimally invasive LVAD therapy using the Impella 5.0 via the RSA cutdown is an attractive option in acute on chronic decompensated heart failure. Improvement in end organ function allows for either transition to recovery or to advanced surgical therapies such as permanent LVAD or heart transplantation. Significant advantages to this approach include improved left ventricular unloading, lower anticoagulation needs, and the potential for ambulation and physical therapy.

120 Does Open Chest After LVAD Affect Blood Transfusion Rates and PRA?

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Background: Patients undergoing left ventricular assist device (LVAD) placement may have different severities of right ventricular failure (RVF). Various treatment strategies for RVF include medications, mechanical support, and inhaled agents. Some centers leave the chest open for the first 24-48 hours as a strategy to treat RVF. However, open chest has the potential to increase blood transfusion rates. The aim of this study was to determine if open chest after LVAD affects blood transfusion rates and panel reactive antibody (PRA) levels at 3 months postimplant.

Methods: A total of 66 patients received continuous flow LVADs between January 2012 and December 2013. Of those, 45 patients had open chest and 21 had chest closed at the time of implantation. The Wilcoxon signed rank test was used to find differences in blood product utilization and PRA levels preimplant and postimplant.

Results: Patient baseline characteristics were similar between the 2 groups. Both groups had similar coagulation parameters, Model for End-Stage Liver Disease (MELD) scores, and preimplant PRA levels. The overall amount of blood product utilization on day of surgery was similar in the 2 groups. A subanalysis of specific blood products indicated no difference in the use of packed red blood cells, platelets, and plasma. There was also no difference in PRA levels pre- and post-LVAD implant. Two (4.4%) patients in the open chest group required right ventricular assist device (RVAD) implantation, whereas 1 (4.7%) patient in the closed chest group needed RVAD placement. There were no incidences of mediastinal infection or sternal infection in either group.

Conclusion: Our study showed no difference in transfusion rates and PRA levels after implant between the 2 groups. Open chest may be utilized as an important option in the treatment of postoperative RVF after LVAD implantation.

Blood Utilization	Open Chest (n=45)	Closed Chest (n=21)	*P* Value
Total Blood DOS	12.76 ± 14.66	9.67 ± 7.91	0.6340
Total Blood Day 1	4.38 ± 8.77	2.43 ± 3.35	0.4287
PRBC DOS	4.18 ± 7.24	2.62 ± 2.82	0.9830
PRBC POD1	2.04 ± 3.45	1.24 ± 1.52	0.5111
Plasma DOS	6.93 ± 6.06	5.95 ± 5.19	0.6629
Plasma POD1	1.80 ± 4.42	1.14 ± 2.22	0.6053
Platelets DOS	1.20 ± 1.41	0.90 ± 1.36	0.4542
Platelets POD1	0.36 ± 0.77	0.05 ± 0.22	0.0537
Cryo DOS	0.44 ± 1.12	0.19 ± 0.51	0.5121
PRA Prior to LVAD	0.15 ± 0.27	0.14 ± 0.29	0.9396
3 Month PRA	0.32 ± 0.39	0.24 ± 0.36	0.5888
Change in PRA	0.168 ± 0.39	0.12 ± 0.27	0.7284

121 Mechanical Circulatory Support: A Multidisciplinary Team Approach for Patient Safety

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Background: The field of mechanical circulatory support (MCS) has made tremendous progress in the past 15 years. Thousands of patients worldwide have undergone implantation of long-term MCS devices. Management of patients with MCS devices has been guided by individual clinicians and center-specific protocols. There have been few randomized studies to guide patient selection and care of the MCS patient. Short-term success with MCS therapy largely depends on patient selection, surgical technique, and postoperative management. Long-term success depends on physician and patient engagement in excellent care of their device and personal health. However, a program's 1-year survival can never be more than their 1-month survival. This is especially important when value-based reimbursement and safety concerns for these resource-intensive and complex therapies are constantly compared with other institutions and available in the public domain.

Methods: We reviewed single institution data (Ochsner Medical Center-New Orleans) for patients who underwent implantation of a long-term MCS device from January 2012 to December 2014.

Results: Three-year results are shown in the Table.

Conclusion: An integrated approach toward disease management can significantly improve survival, thereby making this complex advanced therapy a safe and life-changing option for these patients. Further improvement in patient safety and survival is due to better patient selection, protocol development, central leadership, and a constant reevaluation of outcomes by performing patient-safety reviews.

	2012	2013	2014
Number of Implants	30	45	54
Median ICU stay, days	13	11	6
Median stepdown stay, days	10	13	14
1-year survival	58%	88%	97%

122 Transradial Approach for Percutaneous Intervention of Malfunctioning Arteriovenous Accesses

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Background: Interventions on arteriovenous access are typically performed with direct puncture into the fistula. An alternative is the transradial approach that offers the advantage of visualizing both the arterial and venous limbs as well as any juxta-anastomotic stenosis, all through one access.

Methods: From September 2010-2013, 511 fistulograms were performed on 322 patients, 55 of which were transradial approach procedures in 40 patients (mean age, 60.4 $\pm$ 16.5 years, 50% male). Most accesses were arteriovenous fistulas (92.5%, 37/40), and 98% of interventions (54/55) were performed for stenotic lesion(s). There were 37 initial interventions, 13 secondary inventions, and 5 diagnostic fistulograms through the transradial approach. Stenotic lesions were juxta-anastomotic (n=28), venous (n=11), or both (n=11). Mean follow-up was 14.3 months in 37/40 patients. Outcomes included technical and clinical success, complications, functional patency, and flow rate changes.

Results: All transradial approach punctures were successful with no radial artery thromboses or hand ischemia. Technical success was 88% (44/50). Functional patency rates were 88.5% (23/26), 84.2% (16/19), and 83% (10/12) at 1, 6, and 12 months, respectively. The complication rate was 1.8% (1/55), consisting of arteriovenous fistula rupture after angioplasty. For juxta-anastomotic stenoses (n=20), the average flow rate increased from 637 mL/min to 1,094 mL/min (P=0.01) postprocedure.

Conclusion: The transradial approach is a practical option with comparable functional patency rates to traditional approaches when intervening on malfunctioning dialysis access in the appropriately selected patient. No hand ischemia was noted. This approach may be particularly attractive for treatment of juxta-anastomotic stenoses in a variety of arteriovenous accesses and offers unique practical advantages for the maintenance of arteriovenous accesses.

123 Primary Stent Placement for Hepatic Artery Stenosis Following Liver Transplantation

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Background: Significant hepatic artery stenosis (HAS) after orthotopic liver transplantation can lead to thrombosis with subsequent liver failure in 30% of patients. While operative intervention or retransplantation has been the traditional solution, endovascular therapy has emerged as a less-invasive treatment strategy.

Methods: This was a retrospective review of all endovascular interventions for HAS after orthotopic liver transplantation during a 54-month period (August 2009-December 2013). Patients whose ultrasound imaging showed evidence of severe HAS underwent endovascular treatment with primary stent placement or *p*ercutaneous transluminal angioplasty (PTA). Outcomes were technical success, primary and primary assisted patency rates, reinterventions, and complications.

Results: Sixty-two interventions for HAS were performed in 42 patients with a mean follow-up of 19.1 $\pm$ 15.2 months. The rate of endovascularly treated HAS was 6.4% (42/654). Primary technical success was achieved in 95% (59/62) of cases. Initial treatment was with PTA alone (n=17) or primary stent (n=25). Primary patency rates after initial stent placement were 87%, 76.5%, 78%, and 78% at 1, 6, 12, and 24 months, respectively, compared to initial PTA (64.7%, 53.3%, 40%, and 0%) (P=0.19). There were 20 reinterventions in 14 patients (8 stents, 6 PTAS). The time to initial reintervention in patients with PTA alone vs initial stent was 51 days and 105.8 days, respectively (P=0.16). Overall primary assisted patency was 93% at 24 months. Major complications were one arterial rupture and two hepatic artery dissections. Long-term risk of hepatic artery thrombosis in the entire patient cohort was 3.2%.

Conclusion: HAS after liver transplantation can be treated endovascularly with high technical success and excellent primary assisted patency. This series represents the largest reported cohort of endovascular interventions for HAS to date. Initial use of a stent showed a strong trend toward decreasing the need for reintervention. Avoidance of hepatic artery thrombosis is possible in $>$95% of patients with endovascular treatment and close follow-up.

124 Outcomes of Early Access with Prosthetic Arteriovenous Dialysis Grafts

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Background: Early cannulation of hemodialysis grafts has been described to avoid placement of temporary dialysis catheters. We report our experience with arteriovenous graft creation and early cannulation.

Methods: Fourteen patients had 15 arteriovenous grafts (Flixene, Atrium Medical) placed between April 2011 and February 2013 with intention for early cannulation. Nine grafts were cannulated within 48 hours of placement, 2 within 72 hours. Four grafts were excluded due to cannulation after 72 hours or initial cannulation unknown. Eight grafts were placed to repair pseudoaneurysms, 2 for acute dialysis following access thrombosis, and 1 for acute transplant rejection. Grafts were evaluated for access-related complications and patency.

Results: No patient had graft complications related to early cannulation. The most common complication was swelling (4/11); however, none of the patients with swelling required intervention. Other complications included hand numbness that improved without intervention (1) and cellulitis (1). No pseudoaneurysms or seromas were documented at 6 months. Cumulative functional patency at 6 and 12 months was 90.9% (10/11) and 85.7% (6/7). At the end of the study period, 9 of 11 grafts were patent (81.8%), with average follow-up of 12.6 months. One graft thrombosed twice within 6 weeks of placement and was abandoned; the other thrombosed after 22 months. Primary patency, primary assisted patency, and secondary patency at 6 months were 63.6% (7/11), 100% (2/2), and 75% (3/4), respectively. Six patients required 19 interventions to maintain graft patency: 17 percutaneous interventions, 1 open thrombectomy, and 1 graft revision.

Conclusion: Early cannulation of Flixene grafts can be performed safely with minimal complications, and cumulative patency rates appear at least comparable to standard polytetrafluoroethylene grafts. Use of an early access graft may reduce the need for temporary catheters (and their attendant morbidity and cost) in patients who need urgent hemodialysis or revision of an existing arteriovenous graft.

125 Longer Nil per Os Intervals Are Causal in Extending Hospital Length of Stay Following Laparoscopic Bariatric Surgery

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126 Heparin-Bonded Polytetrafluoroethylene Does Not Improve Hemodialysis Arteriovenous Graft Function

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127 Surgical Treatment of Infected Abdominal Aortic Endografts: A Multicenter Experience

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128 Identifying the Determinant Factors of Human CRC Metastasis Delivered by Stromal Cells in the Form of Microvesicles

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Background: Colorectal cancer (CRC) is the third leading cause of cancer death in the world. The outcomes of CRC patients depend on stage and lymph node (LN) metastasis. Our previous data have shown that lymph node stromal cells (LNSCs) provide supportive roles for CRC growth *in vitro* and tumor progression and metastasis *in vivo*. Recently, microvesicles (MVs) have emerged as novel mediators for cell-cell communication and as a potential source of biomarkers for many diseases, including cancer. To understand the molecular basis of the role of LNSCs in CRC, we isolated MVs released from CRC patient–derived LNSCs (Pt-LNSCs), analyzed their components, and investigated their pathological role in tumor progression.

Methods: LNSCs were isolated from 40 CRC patients' mesentery LNs from the Department of Colon and Rectal Surgery. A time-lapse experiment was performed to visualize the interaction of MVs from Pt-LNSCs or stromal cell line HK (tagged with MV-specific marker CD63-RFP) to the CRC cell line HT-29^{GFP} (tagged with luciferase/GFP) under deconvolutional microscope. MVs from Pt-LNSCs and HK cells were isolated by ultracentrifugation and utilized for tumor growth assay *in vitro* and *in vivo*. Comprehensive characterization of RNA gene expression in MVs and their parent cells (Pt-LNSCs and HK) was conducted using high-throughput RNA sequencing (RNA-seq).

Results: The nanosized MVs are actively secreted from LNSCs, trafficking to and taken up by HT-29 cells. MVs derived from LNSCs promote CRC cell growth *in vitro* and tumorigenesis *in vivo*. RNA-seq revealed that $>$150 RNAs were selectively enriched among 53,723 genes identified from LNSCs and HK cells. Each of these genes was identified for its reported function.

Conclusion: MVs act as an active intercellular communication pathway between LNSCs and CRC cells. Analyzing the key component in MVs may identify effector RNAs involved in CRC development and metastasis.

129 A Multicenter Comparison of On-Pump and Off-Pump Lung Transplant

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Background: Studies have given conflicting views on the risks and benefits of cardiopulmonary bypass (CPB) with respect to primary graft dysfunction (PGD), mortality, and length of hospital stay. This multicenter retrospective cohort study investigated the outcomes of lung transplants performed electively on CPB via median sternotomy vs off-pump lung transplants.

Methods: A group of 20 consecutive patients who underwent lung transplantation on CPB via median sternotomy between February 2010 and April 2011 at Ochsner Medical Center were compared to a matched cohort based on age, sex, and transplant indication of 20 patients who underwent transplant without bypass at the University of Iowa. Differences in intraoperative blood product use, quantity of blood products administered, CPB cannulation and pump complications, allograft function, 30-day survival, and lung allocation score were compared.

Results: Nineteen bilateral sequential lung transplants and 1 single left lung transplant were performed on CPB and compared to 19 bilateral sequential and 1 single right lung transplant performed off pump. Eleven CPB patients received intraoperative transfusions of blood products compared to 12 patients off pump. No complications were directly related to CPB. Three CPB patients developed PGD, while 4 off-pump patients developed PGD. Survival and ischemic times were similar between the 2 groups.

Conclusion: These data suggest that the use of CPB results in comparable lung transplant outcomes. Intraoperative blood product usage, rates of PGD, and 30-day mortality rates were similar between on-pump and off-pump lung transplants. The use of CPD is a safe and comparable method for performing lung transplant.

130 Role of Pre- and Posttransplant Renal Function on 1-Year Survival in Liver and Liver/Kidney Transplant Patients Who Received Intraoperative Renal Replacement Therapy

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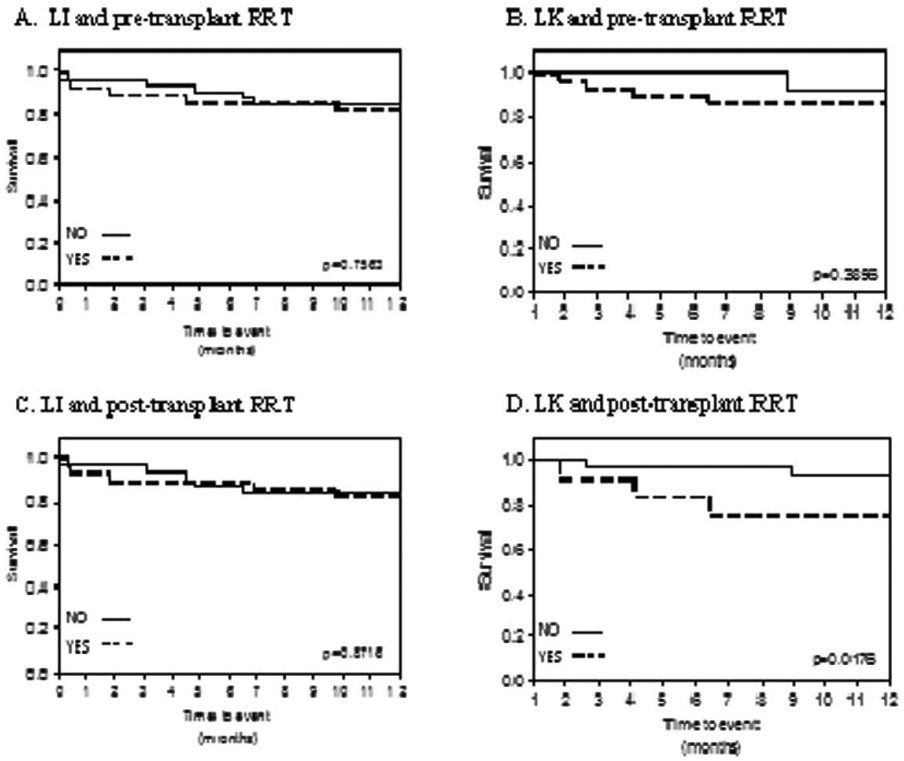
Background: Pre- and posttransplant acute kidney injury drastically affects 1-year survival following liver transplantation.

Methods: Following institutional review board approval, the charts of 105 patients who received intraoperative renal replacement therapy were analyzed. Sustained low-efficiency dialysis was planned in all 61 liver and 44 liver-kidney transplant patients based on preoperative acute kidney injury (creatinine $\geq$2 mg/dL or renal replacement therapy at the time of the transplant) with or without electrolyte abnormalities (Na $<$130 mEq/L and K $>$5 mEq/L), liver-kidney, and redo liver transplantation.

Results: Liver transplant and liver-kidney transplant patients had similar 1-year survival rates of 84% and 86%, respectively (χ^2=0.15, P=0.6981) even though 46% of liver transplant patients and 68% of liver-kidney transplant patients required pretransplant renal replacement therapy with an overall median Model for End-Stage Liver Disease (MELD) score of 33 (range, 26-40). Kaplan-Meier survival curves for liver transplant patients and liver-kidney transplant patients based on the need for pre- (Figure, A&B) or posttransplant (Figure, C&D) renal replacement therapy observed a significant 1-year survival difference from 94% to 67% in liver-kidney transplant patients requiring posttransplant renal replacement therapy (Figure, D).

Conclusion: Renal failure requiring renal replacement therapy after transplantation, irrespective of pretransplant dialysis status, is a profound risk factor for death in liver-kidney transplant patients.



131 Aminocaproic Acid Does Not Increase Postoperative Thromboembolic Complications: A Single-Center Retrospective Study in 710 Liver Transplantations

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Background: Studies investigating the role of antifibrinolytics and thromboembolic events during liver transplantation have been inconclusive.

Methods: Following institutional review board approval, medical records for 710 adult liver transplantations performed at Ochsner Medical Center from 2008-2012 were analyzed. Aminocaproic acid was administered following liver transplantation reperfusion in 265 (37%) cases with an average bolus dose of 6.6 $\pm$ 2.8 g and with 159 (22%) patients receiving a continuous infusion of 1 g/hour of aminocaproic acid. Pretransplant characteristics are presented in the Table.

Results: No difference in 1-year survival rates between groups was observed (92% vs 94%, χ^2=0.687, *P*=0.4071). Ten (1.4%) patients had intraoperative thrombosis/pulmonary embolism, with 5 (0.7%) intraoperative deaths not attributed to aminocaproic acid administration. In spite of significant differences in blood/products administration in the aminocaproic acid group, there was no significant change in the incidence of postthrombotic and bleeding complications or dialysis dependence at 90 days.

Conclusion: Administration of aminocaproic acid after liver transplantation reperfusion for active bleeding appears to be safe without an increase in postoperative thromboembolic complications or dialysis dependence at 90 days or a decrease in 1-year survival rates.

Pre-Transplant Characteristics and Post-Transplant Outcomes

	YES EACA (n=265)	NO EACA (n=445)	P value
Pre-transplant characteristics			
Age/Male	55 (50-60)/178 (67%)	56 (51-62)/292 (66%)	> 0.05
BMI, kg/m^2	29 (26-34)	28 (24-32)	0.0183*
MELD	22 (17-30)	19 (13-26)	<.0001*
Viral hepatitis, n%	108 (41%)	200 (45%)	0.1917
Redo transplantation, n%	21 (8%)	32 (7%)	0.7086
Portal vein thrombosis, n%	35 (13%)	44 (10%)	0.1770
History of CAD, n%	17 (6.4%)	32 (7.2%)	0.6932
RRT prior transplant, n%	25 (9.4%)	30 (6.7%)	0.1943
Intraoperative RRT, n%	56 (21%)	73 (16.4%)	0.1141
Post-transplant outcomes			
Myocardial infarction, n%	20 (7.6%)	19 (4.3%)	0.0638
Ischemic stroke, n%	5 (1.9%)	6 (1.4%)	0.5742
Thrombotic complications < 1 month, n%	14 (5.3%)	17 (3.8%)	0.3562
Early HAT < 1 month, n%	5 (1.9%)	19 (4.3%)	0.0893
Post transplant bleeding < 1 month, n%	17 (6.4%)	36 (8.1%)	0.4115
Dialysis dependence at 90 days, n%	5 (2%)	11 (2.6%)	0.6201
pRBC, units	5 (3-8)	2 (1-4)	< .0001*
FFP, units	6 (3-11)	2 (0-4)	<.0001*
PLTS, units	3 (2-4)	1 (0-2)	<.0001*
CRYO, units	2 (1-3)	1 (0-2)	<.0001*
Cell Saver, ml	435 (123-1219)	142 (0-490)	<.0001*

The values are presented as median (25th and 75th percentiles) or as numbers and %; CAD: coronary artery disease; RRT: renal replacement therapy; pRBC packed blood cells; FFP fresh frozen plasma; PLTS platelets; CRYO: cryoprecipitate; HAT hepatic artery thrombosis; Thrombotic complications (deep venous thrombosis, hepatic or portal or IVC vein thrombosis, peripheral or central venous thrombosis)

132 Open Atrial Anastomosis During Lung Transplantation: Risks and Benefits

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Background: A wide variety of approaches to the performance of lung transplantation persist. No consensus has emerged regarding optimal strategies. We have elected to perform lung transplantation via median sternotomy with cardiopulmonary bypass. By utilizing the heart-lung machine, we are better able to maintain hemodynamic stability during the operation. Additional technical benefits include the option to open the left atrium for implantation of the venous cuff from the donor lung without employing a clamp. This improved exposure and resultant technical improvement have the potential benefits of reduced anastomotic bleeding and a decreased incidence of venous stenosis. The most significant potential pitfall is the increased risk of stroke due to air emboli entering the circulation via the open atrium.

Methods: We reviewed the records of 79 patients who underwent lung transplantation at our institution between February 2010 and February 2014. Charts were surveyed for stroke, bleeding, reexploration for bleeding, and 1-year patient and graft survival.

Results: Overall 1-year survival was 90% (71/79). There were no incidences of venous stenosis. Although 5 patients required reexploration for bleeding, in no case was the source of bleeding demonstrated to be at the atrial cuff. There were no preoperative strokes.

Conclusion: Open atrial anastomosis is a safe and effective technique for lung transplantation that may reduce immediate and late complications.

133 Novel Biliary Reconstruction Techniques During Liver Transplantation

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Background: Historically, the biliary anastomosis has been termed the Achilles' heel of orthotopic liver transplantation. There are several surgical options that can be performed to deal with a significant size mismatch between the donor and recipient bile ducts during the biliary anastomosis. A paucity of data exists for the outcomes of 2 novel biliary reconstruction techniques—biliary ductoplasty and biliary transposition. The objective of this study was to compare the outcomes of biliary ductoplasty and biliary transposition.

Methods: From January 1, 2005 to December 31, 2013, 10 patients underwent biliary ductoplasty and 23 patients underwent biliary transposition at Ochsner Medical Center. The primary outcomes studied were patient and graft survival at 1, 3, and 5 years. Secondary outcomes were additional postoperative complication rates with a focus on biliary strictures and hepatitis C recurrence.

Results: Patient survival for biliary ductoplasty and biliary transposition were both 100.0% at 1 year, 80.0% and 88.2% at 3 years, and 75.0% and 85.7% at 5 years (P=0.3542). Graft survival for biliary ductoplasty and biliary transposition were both 100.0% at 1 year, 80.0% and 82.3% at 3 years, and 75.0% and 85.7% at 5 years (P=0.6035). Additional postoperative complication rates were 70.0% for biliary ductoplasty and 60.9% for biliary transposition (P=0.71). Seventy percent of patients in the biliary ductoplasty group had a stricture compared to 47.8% in the biliary transposition group (P=0.28). Hepatitis C recurrence rates were 70.0% in the biliary ductoplasty group and 56.5% in the biliary transposition group (P=0.70).

Conclusion: Our results indicate that biliary reconstruction in the face of significant bile duct size mismatch can be performed using either method, but a trend appears to favor outcomes with biliary transposition when compared to biliary ductoplasty.

134 Lung Transplantation: On or Off Cardiopulmonary Bypass?

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Background: Lung transplantation can be performed on cardiopulmonary bypass or off cardiopulmonary bypass. There has been much debate regarding outcomes and which procedure provides the lowest risk for morbidity and mortality after transplantation. Ochsner has been involved in lung transplant since the early 1990s. During this period, techniques have continued to evolve. Since 2010, all lung transplants have been performed on cardiopulmonary bypass, whereas prior to 2010, cardiopulmonary bypass was reserved for patients whose status quickly declined.

Methods: We identified 207 patients in the non-cardiopulmonary bypass group from 1990-2005 and 79 patients in the cardiopulmonary bypass group from 2010-2014. Through a retrospective review, the patients were evaluated for date of transplant to the date of graft failure, with a minimum of 1 year since transplant. One-year graft survival was considered successful. We then compared the graft survival rates between the two groups.

Results: Of the 207 patients in the non-cardiopulmonary bypass group, 151 patients (73%) had 1-year graft survival. Of the 79 patients who underwent transplant on cardiopulmonary bypass, 71 (90%) had 1-year graft survival.

Conclusion: Lung transplantation is a continually evolving field with improvements coming in many areas—from improved immunosuppressant medications to improved surgical techniques. Standards should be evaluated to give patients the best possible outcomes. We have shown that graft survival has improved since cardiopulmonary bypass has been implemented in all lung transplant cases at Ochsner. With this information, In the future we intend to look at stroke rates, venous stenosis rates, and hemorrhage requiring takeback procedures.

135 A Novel Cause of Left Ventricular Outflow Tract Obstruction

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Background: Most cases of left ventricular outflow tract (LVOT) obstruction are due to a hypertrophied ventricular septum and systolic anterior motion of the anterior mitral valve leaflet. Here we present a case of LVOT obstruction secondary to right ventricular (RV) overload.

Case Report: A 29-year-old male with a history of pulmonary Langerhans cell granulomatosis presented for bilateral lung transplantation. After induction of anesthesia, a transesophageal echocardiogram (TEE) probe was placed, and a 4-chamber midesophageal view revealed a severely enlarged right ventricle (RV diameter 7.9 cm) with severely depressed RV function and severe tricuspid regurgitation. The interventricular septum was pushed convexly towards the left ventricle throughout the cardiac cycle, and the LVOT was noticeably narrowed. Although the left ventricular (LV) cavity was underfilled due to compression from the right ventricle, LV function was normal. There was no evidence of LV hypertrophy. From the midesophageal long axis view, the interventricular septum was seen bowing into the LVOT. During systole, this bowing caused complete LVOT obstruction due to contact between the interventricular septum and the anterior mitral valve leaflet.

Conclusion: LVOT obstruction is most commonly seen in patients with hypertrophic cardiomyopathy. Dynamic LVOT obstruction is caused when the anterior mitral valve leaflet comes in contact with the hypertrophied septum. Classic TEE findings include turbulent color flow in the LVOT and increased velocity profile on Doppler interrogation. This case is unique in that the patient did not have any form of LV hypertrophy, but the LVOT was instead obstructed due to RV overload. This patient had RV volume overload from severe tricuspid regurgitation and RV pressure overload from long-standing pulmonary hypertension. The interventricular septum bowed toward the left ventricle throughout the entire cardiac cycle, coming in contact with the anterior mitral valve leaflet, leaving the left ventricle underfilled and obstructing the LVOT.

136 Novel Use of Real-Time Three-Dimensional Transesophageal Echocardiogram for Guiding Cardiovascular Foreign Body Retrieval

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Background: Cardiovascular foreign bodies pose a unique problem for clinicians. Foreign bodies can be iatrogenic or traumatic and can be treated surgically or conservatively. If left untreated, they can cause a host of adverse outcomes.

Case Report: A 59-year-old female with a history of end stage renal disease presented with a failed arteriovenous fistula in need of vascular access for urgent hemodialysis. A right internal jugular Perm-a-Cath was attempted under fluoroscopy. The surgical team encountered difficulty placing the original guidewire and during an exchange for a larger, more durable guidewire, a fragment of the 4 French sheath in place was sheared and dislodged. Immediate surgical cutdown for foreign body retrieval was unsuccessful and the patient was transferred to a hybrid fluoroscopy operating room for foreign body retrieval. Once under fluoroscopy, an attempt to snare the foreign body with an endovascular snare system (EN Snare) dislodged the catheter and allowed its migration to the right atrium. Additional attempts at retrieval with the EN Snare were unsuccessful due to poor visualization under fluoroscopy and difficulty spatially arranging the EN Snare with the foreign body. In an effort to forgo open cardiovascular removal of the foreign body and expose this frail patient with multiple comorbidities to cardiopulmonary bypass surgery, the decision was made to employ transesophageal echocardiography (TEE) to assist in realizing the foreign body's spatial arrangement in the right atrium. With the capability of 3-dimensional (3D) views, TEE imaging allowed the surgical team to approximate the dislodged catheter and EN Snare in real time, allowing for successful retrieval.

Conclusion: Three-dimensional TEE is commonly employed for more detailed assessment of intracardiac pathology. Although there is literature suggesting a role for 3D TEE in cardiovascular foreign body removal, this is the first known case documenting 3D TEE as playing an integral role.

137 A Case Report: Idiopathic Dilated Pulmonary Artery

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Background: A 45-year-old woman presented with malaise, resting palpitations, and atypical chest pain.

Case Report: The patient had undergone lifelong surveillance for an asymptomatic murmur detected at birth. A prior echocardiogram showed a right ventricle (RV) size of 2.7 cm, pulmonary valve annulus of 3.7 cm, and main pulmonary artery (PA) of 5.5 cm. Current exam findings included a decrescendo diastolic and pansystolic murmur along the left lower sternal border. Pertinent findings in her workup included $>$6,000 premature ventricular contractions on 24-hour Holter monitor, PA prominence on chest radiograph and echocardiogram with bubble study showing a mildly depressed ejection fraction, RV size of 5.0 cm, tricuspid annular plane systolic excursion of 1.5 cm, S prime of 7 cm/s, dysplastic pulmonary valve with severe insufficiency, mild tricuspid regurgitation, and main PA diameter of 6.3 cm. Although other imaging modalities supported the echocardiogram's findings, cardiac computed tomography was able to demonstrate extrinsic compression of the left main coronary artery by the PA aneurysm, while cardiac magnetic resonance imaging was unremarkable for arrhythmogenic RV dysplasia. The patient subsequently underwent successful reconstruction of the PA and placement of a pulmonary valve homograft. Echocardiogram was able to demonstrate the longitudinal dynamic effects of RV dysfunction on left ventricular function. The strengths of echocardiograms include objective structural and functional quantification based upon American Society of Echocardiography guidelines. Importantly, in the evaluation of unrestricted/severe pulmonary regurgitation, the clinician must be vigilant to use continuous wave Doppler, as color flow can potentially fail to detect turbulent flow in a to-and-fro state.

Conclusion: Idiopathic dilated PA is a rare entity occurring in $<$0.007% of the population. There are no pathognomonic symptoms, diagnostic criteria, or evidence-based treatment recommendations. This case emphasizes important strengths, boundaries, and interactions in the use of multimodality imaging in complex congenital heart disease.

138 A Case Report: Melody Valve-in-Valve Implantation for Tricuspid Stenosis

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Background: A 48-year-old woman with a history of ligated patent ductus arteriosus, surgical closure of an atrial septal defect, tricuspid valve replacement with a bovine pericardial valve for tricuspid regurgitation, and radiofrequency ablation for atrial flutter presented for evaluation of worsening exertional dyspnea.

Case Report: The patient's examination was notable for a mid-diastolic murmur at the lower-left sternal border and symmetric lower extremity edema. Pertinent findings on her workup included an ejection fraction of 60%; a dilated right ventricle with mildly depressed function; and a well-seated tricuspid valve prosthesis with severe stenosis, minimal regurgitation, a tTV diastolic gradient of 12 mmHg, and a TVA of 0.6-7. With the patient under general anesthesia, a right transfemoral approach was employed, and a 22 mm Melody valve was successfully implanted into the tricuspid position with immediate resolution of the right atrial-to-ventricular gradient and subsequent rise in mean pulmonary capillary wedge pressure (PCWP) by 6 mmHg. The rise in PCWP was the presumed etiology of a noncardiogenic pulmonary edema that catalyzed the patient's transfer to the coronary care unit and necessitated therapy with phosphodiesterase inhibitors and diuretics.

Conclusion: The Melody valve is a percutaneous valve that traditionally has been used in the pulmonic valve position as nonsurgical therapy for patients with right ventricular outflow tract dysfunction and is intended for right ventricle-to-pulmonary artery conduits. Current literature only has two documented reports of a valve-in-valve implant of this device in the tricuspid position. We are thus reporting one of the first cases of a successful Melody valve-in-valve implantation in the tricuspid position in an adult patient. We hypothesize that the patient developed postimplantation noncardiac pulmonary edema as a result of barotrauma/volutrauma from the increased right-sided cardiac output after obviation of the tricuspid stenosis. However, we believe that real-time objective hemodynamic assessment using a Swan-Ganz catheter would be beneficial in future valve deployments.

139 A Case of Pulmonary Vein Fibrosarcoma Discovered with Echocardiography

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Background: A 48-year-old female presented with progressive dyspnea on exertion over a year, visual changes, and pleuritic-type chest pain with worsening dry cough. She had seen multiple physicians during the past year and had been given a presumptive diagnosis of Behcet disease.

Case Report: The patient denied fevers, chills, night sweats, abdominal pain, nausea, sick contacts, and recent travel. Multiple thoracenteses revealed an exudative left pleural effusion. During physical examination, crackles were noted in all lung fields, with dullness to percussion in the left lower fields. Cardiac examination revealed tachycardia but was otherwise unremarkable. Electrocardiogram showed sinus tachycardia with left atrial enlargement. Chest radiographs revealed a multifocal pneumonia with a small left pleural effusion. Noncontrast chest computed tomography performed 8 months prior to diagnosis revealed patchy opacities, a left hilar mass compressing the left pulmonary veins, and left pleural effusion. Echocardiography showed normal biventricular function with an ejection fraction of 60%, moderate left atrial enlargement, pulmonary hypertension, and a 6×4 cm mass filling most of the left atrium. The mitral valve mean gradient was 15 mmHg. The patient underwent left pneumonectomy and resection of the left atrial mass, which originated from the left pulmonary veins. Resection of the left pulmonary veins confirmed pathology consistent with fibrosarcoma.

Conclusion: This case demonstrates the importance of echocardiography in the diagnosis of malignancy not visualized by other imaging modalities. The patient's clinical presentation of dyspnea with exertion and recurrent pleural effusions were consistent with functional mitral stenosis caused by the mass. Fibrosarcoma of the pulmonary veins is extremely rare with fewer than 25 cases reported. Echocardiography is an important tool in making the diagnosis.

140 Acute Kidney Injury Due to Abdominal Compartment Syndrome: A Case Report

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Background: Abdominal compartment syndrome (ACS) is a clinical entity known to cause new organ dysfunction and ischemia due to intraabdominal hypertension (IAH) with a variable-dependent threshold. IAH causes direct compression on multiple organs, impairing oxygen delivery to tissues. Early recognition of ACS is critical, as it is often associated with high morbidity and mortality rates.

Case Report: A 58-year-old male with decompensated alcoholic cirrhosis presented with acute kidney injury (AKI). The patient also had severe ascites, bilateral leg edema, mild nausea, and shortness of breath. The patient's AKI did not respond to the usual treatment, including octreotide, albumin, and midodrine. To rule out spontaneous bacterial peritonitis, the patient received a diagnostic and therapeutic paracentesis with 3 liters of fluid removed. After the paracentesis, his urine output improved and his blood urea nitrogen and serum creatinine began to trend downward from 50/6.0 to 20/1.8 during the following 2 weeks. The patient presented again 3 weeks later with a new AKI and received another therapeutic paracentesis with subsequent improvement in renal function. The repeated rapid and significant response following abdominal paracentesis after failing traditional medical management indicates a high likelihood that this patient had ACS. However, because this diagnosis was made after the patient had already recovered, we were unable to obtain intraabdominal pressure measurements to confirm our hypothesis.

Conclusion: This report demonstrates that paracentesis is useful in the management of ACS. Animal and human studies suggest that kidneys are particularly at high risk even at a low level of IAH (12-15 mmHg) and that AKI is an early consequence of ACS. Thus, it is important to recognize ACS early and perform paracentesis as necessary to prevent further complications from renal dysfunction.

141 Pericardial Effusion: A Rare Phenomenon in Hodgkin Lymphoma

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Background: Involvement of the heart and pericardium are rare occurrences in Hodgkin lymphoma and suggest advanced disease. Most patients present with painless localized peripheral lymphadenopathy, typically involving the cervical region and B symptoms (fever, weight loss, and sweating).

Case Report: A previously healthy 22-year-old male presented with an 8-week history of cough, fatigue, fever, chills, mild headache, and unintentional 30 lb weight loss over 1 month. During examination, the patient was tachycardic and had a mild tremor but no palpable lymphadenopathy. Cardiac dullness and muffled heart sounds were not detected. Chest x-ray showed widening of the mediastinum. Computed tomography scan revealed a large pericardial effusion and a mass compressing both innominate veins. Further investigation revealed increased white blood cell count of 15.24K/μl. Tests for Epstein-Barr virus, human immunodeficiency virus, and cytomegalovirus were negative. Pericardiocentesis was performed with return of clear amber-colored fluid mostly composed of lymphocytes. Lymph node biopsy from the right supraclavicular region revealed nodular sclerosing Hodgkin lymphoma (NSHL) with Reed-Sternberg cells. Positron emission tomography scan showed a localized mass at the left upper mediastinum indicating stage IIB NSHL. The patient started a 6-week course of AVBD (doxorubicin, vinblastine, mechlorethamine, vincristine, bleomycin, etoposide, and prednisone) treatment for NSHL.

Conclusion: The presence of a pericardial effusion in the early stages of Hodgkin lymphoma is rarely documented. Pericarditis with elevated jugular venous pressure may be seen; however, few documented cases of symptomatic pericardial effusion without pericarditis have been observed in Hodgkin lymphoma. B symptoms in this patient appropriately prompted the initial evaluation, revealing a pericardial effusion.

142 Improvement of Serum Albumin and Phosphorus and Significant Weight Loss in a Peritoneal Dialysis Patient on a Plant-Based, High-Protein Diet

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Background: Achieving a higher albumin level is important in patients with end stage renal disease (ESRD), as a drop in albumin affects morbidity and mortality. Traditionally, plant-based, high-protein diets are not prescribed to patients on dialysis due to their high phosphate content. In this case, we successfully used a high-protein, plant-based diet without causing hyperphosphatemia.

Case Report: In January 2014, a 42-year-old Caucasian female with ESRD who was on peritoneal dialysis (PD) and who weighed 272 pounds went on a vegetarian diet to lose weight. The patient's albumin level dropped as high-protein items were restricted. In March 2014, the patient was advised to include high-protein, plant-based food items in her diet. Plant-based, high-protein foods do not increase phosphate levels, as the phosphorous in plant-based, high-protein items occurs in its phytate form which is not absorbable in humans. The patient showed significant improvement in her albumin and phosphorous levels by April 2014 (Table). After being on this diet for 6 months, she also accomplished a net weight loss of 60 pounds.

Conclusion: We describe the first case study to our knowledge involving a patient with ESRD on PD who used a plant-based, high-protein diet to improve not only albumin levels but also to normalize phosphate levels and achieve significant weight loss. High-protein, plant-based food items contain phosphorous in phytate form that is safe for ESRD patients. Future studies of plant-based, high-protein diets in the ESRD patient population are warranted to show that plant-based diets can be used effectively to improve the nutritional status of patients and result in weight loss as an added benefit.

Nutritional Parameters: Baseline and After Intervention

Dates	Serum albumin, mg/dL	Serum phosphorous, mg/dL	Serum potassium, meq/L	Corrected calcium, mg/dL
January 2014	3.4	7.3	3.7	8.9
February 2014	3.1	9.5	3.6	9.3
April 2014	3.7	4.3	3.7	10.3

143 Phenotypic Hybrid Presentation of Two Rare Genetic Disorders Posing Therapeutic Challenges in the Management of A Severe Case of Chronic Hypokalemia

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Background: Genetic disorders with chronic hypokalemia are rare. We describe a rare case of severe hypokalemia that was diagnosed in a 6-year-old patient.

Case Report: The patient presented with severe muscle cramps and was found to have a potassium level of 2.0 mEq/L. She was diagnosed with Gitelman syndrome at that time. During the following 12 years, she was treated with amiloride and potassium chloride. During this period, she required intravenous potassium chloride supplementation at times on an emergency basis. She presented to our service at the age of 18 years in August 2014 with short stature, chronic hypokalemia, and metabolic alkalosis with normal blood pressure. Her workup indicated secondary hyperaldosteronism. Interestingly, her detailed workup showed that she had clinical and metabolic features of both Gitelman syndrome and Bartter syndrome (Table). Because she manifested severe hypokalemia at an early age (more like Bartter syndrome) and had not responded to conventional treatment of Gitelman syndrome, we started the patient on spironolactone (an aldosterone receptor antagonist) in combination with indomethacin (a prostaglandin E2 inhibitor),treating her for Bartter syndrome. Within a month of starting her new treatment, the patient achieved the normal level of potassium. The patient has maintained normal potassium levels since then for the first time in her life without any emergency room visits.

Conclusion: Genetic disorders causing hypokalemia can present with phenotypic findings of both Bartter and Gitelman syndrome in a hybrid form. In such cases, an alternative therapeutic approach may be successfully adopted. As a clinician, one should be open to reconsider the original diagnosis as well as try alternative treatments along with genetic testing for confirmation of diagnosis.

Overlapping Clinical Findings

Dates	Potassium, meq/L	Bicarbonate, meq/L	Magnesium, meq/L	Phosphorous, mg/dL	24-hour urine calcium excretion, mg/hour
October 2013	2.2	31	1.8	3.4	1
August 2014	3.3	29	1.4	2.9	
September 2014	4.8	26		3.1	
October 2014	4.3	25		3.4	
Clinical syndrome associated	Gitelman & Bartter	Gitelman & Bartter	Gitelman & Bartter	Bartter	Gitelman

144 IgA-Dominant Postinfectious Glomerulonephritis Mimicking Henoch-Schönlein Purpura in a Child

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Background: IgA-dominant acute postinfectious glomerulonephritis (APIGN) is an increasingly recognized entity typically seen in the elderly and in patients with diabetes. Henoch-Schönlein purpura (HSP) predominantly occurs in the pediatric population. We report a child with typical initial presentation of HSP whose clinical course, biopsy, and outcome were suggestive of IgA-dominant APIGN.

Case Report: A 6-year-old African American male was admitted for progressive facial swelling, decreased urine output, and difficulty breathing for 3 days. Two weeks prior, he had been seen for left knee swelling and a palpable purpuric rash. During examination, he was afebrile with facial swelling, nasal flaring, and grunting. A gallop rhythm was heard, and he had a diffuse excoriated rash. Laboratory data were urinalysis (UA) 3+ protein, 3+ blood with 50 red blood cells (RBCs) and 13 white blood cells, and 1.5 g protein/24 h; blood urea nitrogen/serum creatinine (BUN/sCr) 35/0.8 mg/dL; serum cholesterol 104 mg/dL, albumin 1.8 g/dL, streptozyme positive at 400 STZ units; antinuclear antibody negative; and component 3 (C3) 68 mg/dL. Echocardiogram (ECHO) indicated decreased function. Kidney biopsy showed diffuse endocapillary proliferation with IgA-dominant 3+ mesangial and irregular granular capillary wall staining and lambda more than kappa. Electron microscopy showed frequent mesangial and subendothelial deposits and rare subepithelial hump-type deposits. The biopsy was suggestive of IgA-dominant APIGN. The patient was discharged on diuretics and an angiotensin-converting enzyme inhibitor. All cultures were negative. Four months following discharge, he was on no medications. His ECHO was normal, BUN/sCr was 9/0.6 mg/dL, C3 was 104 mg/dL, and UA was 1+ for protein and 2+ for blood with 28 RBCs/HPF and 290 mg protein/24 h.

Conclusion: The initial clinical presentation, including the skin and kidney biopsy findings in IgA-dominant APIGN, is typically indistinguishable from that of HSP. IgA-dominant APIGN rarely can mimic HSP in the adult population, and it also occurs in children. The diagnosis should be made with a high degree of clinical suspicion, looking diligently for the possibility of an underlying infection.

145 A Rare Case of Graft vs Host Disease as a Cause of Nephrotic Syndrome and Acute Kidney Injury

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Background: Graft vs host disease (GVHD) is a common complication following hematopoietic stem cell transplantation (HSCT). Renal involvement with GVHD typically manifests as membranous nephropathy, less commonly as focal segmental glomerulosclerosis or minimal change disease. There is a paucity of literature that describes nephrotic syndrome (NS) secondary to GVHD.

Case Report: A 61-year-old male with a history of myelodysplastic syndrome after bone marrow transplant complicated by GVHD and chronic kidney disease stage 3 (baseline creatinine 1.5-1.8) presented for a workup of NS. The patient had a history of resolved NS secondary to calcineurin inhibitor and pamidronate toxicity that was biopsy proven in 2011 (showed collapsing glomerulopathy with 80% interstitial fibrosis and 4 globally sclerosed glomeruli). His clinical course improved with cessation of tacrolimus and zoledronic acid and with slow-taper prednisone therapy, as he was also being treated for bronchiolitis obliterans organizing pneumonia. In 2014, the patient presented with worsening edema and acute kidney injury with >8 g of proteinuria. Serology was once again negative, except for a decreased C4 level. Renal biopsy demonstrated a near full-house immunofluorescent staining pattern, frequent medium to large mesangial immune complex deposits on electron microscopy, and 20%-30% interstitial fibrosis—findings indicative of mesangiopathic immune complex–mediated glomerulonephritis. The patient was started on weekly rituximab for 4 weeks and a slow prednisone taper. At 6-month follow-up, his creatinine was stable at 1.5 and 2 g proteinuria.

Conclusion: The prevalence of GVHD in the kidney is <2%. Most reported cases of glomerular disease after HSCT were diagnosed as membranous glomerulopathy, with minimal change disease being the next most common. There appears to be a close relationship between the development of NS shortly after reduction or cessation of immunosuppression and the diagnosis of chronic GVHD. This case depicts the importance of obtaining a renal biopsy for patients with GVHD soon after presentation with acute kidney injury and proteinuria to determine the underlying pathology and to guide treatment.

146 Mojo-Induced Critical Illness: Clinical Syndrome Imitation of Status Epilepticus

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Background: Synthetic cannabinoids under the names Mojo, Spice, and K2 have clinical consequences that include psychiatric, neurologic, and multiorgan dysfunction. Their accessibility is a public health concern. Due to the increasing number of cases presenting to local emergency departments (EDs), healthcare providers will see these patients presenting with seizure-like events. Here we present a case of synthetic cannabinoid Mojo-induced status epilepticus.

Case Report: A 20-year-old man with no significant medical history was transferred from the Ochsner West Bank ED for uncontrolled seizures. He presented to the ED in a postictal state after his mother found him foaming and shaking uncontrollably. During examination at the West Bank ED, a laceration to the tongue was discovered. He denied synthetic marijuana or any other drug except daily marijuana. He arrived at Ochsner Medical Center with a Glasgow Coma Scale score of 6 and under sedation with propofol and midazolam for presumed status epilepticus. Initial tests revealed negative toxicology panel except for tetrahydrocannabinol, metabolic acidosis, and leukocytosis. Cerebrospinal fluid cultures, chest x-ray, computed tomography, and magnetic resonance imaging were negative for an acute process. He was admitted with an incomplete right bundle branch block on electrocardiography and elevated creatinine phosphokinase (1,028 U/L). Keppra (levetiracetam) was continued with antibiotics. During the patient's admission, his creatine phosphokinase rose to 9,936 U/L by day 4 and then declined with mental status improvement and resolution of leukocytosis. Due to Mojo intoxication and rhabdomyolysis, the patient developed acute kidney injury. He admitted to synthetic marijuana use and was subsequently counseled about illicit and synthetic substances. He was discharged with no residual neurologic deficit on day 5.

Conclusion: What this case teaches healthcare providers is that patients who expose themselves to synthetic marijuana can present with multiorgan dysfunction and status epilepticus.

147 Autonomic Dysreflexia Following Spinal Cord Transection

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Background: Spinal cord transection is a radical but effective treatment for highly selective cases of sympathetic spinal tethering in paraplegic spina bifida patients. The primary advantage for such an extreme measure is the ability to provide definitive untethering. This is in contrast to risking additional untethering procedures. There are few reported complications associated with this procedure. Autonomic dysreflexia (AD) is a syndrome of imbalanced reflex sympathetic discharge commonly found in cervical and high thoracic spinal cord injury (SCI). AD is characteristic in chronic injury phases, but it may occur any time following SCI. It is thought that acute autonomic hyperreflexia arises from the loss of bulbospinal sympathetic modulation rather than reorganization of intraspinal neural circuits. The purported mechanism for sympathetic dysreflexia is the loss of central input and control of the splanchnic sympathetic outflow (usually located at or below the spinal level of T6).

Case Report: We report a case of new-onset AD following a spinal cord transection procedure. The patient underwent T12-level cord transection without any significant intraoperative complications. The patient developed intermittent episodes of significant hypertension, bradycardia, headaches, and flushing of the head and upper body within 2 days of surgery. The patient is doing well at 2-year follow-up. We hypothesize that the long tethering of his spinal cord due to an unrepaired myelomeningocele resulted in his splanchnic outflow center being located significantly lower than in nontethered spinal cord patients.

Conclusion: Being aware of these potential complications and their treatment options is important for neurosurgeons and physical medical and rehabilitation physicians.

148 Atypical Retinal Lesion in a Heart Transplant Patient: Investigation and Management

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Background: We present the case of a heart transplant patient who presented with a retinal lesion.

Case Report: A 59-year-old male heart transplant patient with flashes of light in the left eye presented for examination at Ochsner Ophthalmology Clinic. The patient had undergone a heart transplant 3 months prior at Ochsner Medical Center. His postoperative course included a chest wound infection by *Candida* and a *Pseudomonas* urinary tract infection. Examination of the anterior chamber of his left eye showed inflammation. A large hypopigmented lesion was discovered in the nasal retina of the left eye. The differential diagnosis included cytomegalovirus (CMV) retinitis, herpetic retinitis, *Pseudomonas* abscess, *Candida* chorioretinitis, and toxoplasmosis chorioretinitis. The patient was admitted to the hospital. Empiric treatment was initiated and workup was ordered, for which was all negative. Over the course of several days, the patient's retinal lesion extended. A tap of the eye's vitreous and aqueous fluid yielded no diagnosis. The patient underwent a chorioretinal biopsy through a pars plana vitrectomy. Fluid removed from the vitreous cavity was sent for polymerase chain reaction (PCR), and intravitreal antibiotics were injected. The results of the PCR were negative for all organisms. However, the lesion stabilized.

Conclusion: CMV PCR has 95% sensitivity in untreated patients but only 48% sensitivity in patients who have been treated with systemic ganciclovir, foscarnet, or both. It was determined that CMV retinitis was the most likely diagnosis. The patient has remained stable on oral valganciclovir.

149 Hemophagocytic Lymphohistiocytosis: A Pediatric Disease in an Adult Intensive Care Unit

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Background: Hemophagocytic lymphohistiocytosis (HLH) is a rare hyperinflammatory state more common in children than adults.

Case Report: A 21-year-old Caucasian female with morbid obesity presented to the emergency department with a fever of 40.1°C, sore throat, vomiting, rigors, cough, arthralgia, myalgia, rash, decreased oral intake, and lethargy. Her primary physician had diagnosed her with strep throat with a positive culture 4 days earlier when she presented with fever, sore throat, and rash, and she was started her on amoxicillin. She had no history of autoimmune disorders, sick contacts, pets, other medications, or drug allergies. Physical examination was remarkable for erythema and diffuse exudate of the tonsils bilaterally. Bimanual examination did not reveal the presence of a retained foreign body. Tender, violaceous macules were noted on the dorsum of the hands, feet, and chest wall. Laboratory results demonstrated thrombocytopenia and leukocytosis. The patient quickly decompensated, developing respiratory distress requiring ventilator support and vasopressors. Her course was further complicated by kidney injury requiring dialysis and disseminated intravascular coagulation requiring blood products. Pediatric hematologists suggested workup for HLH. Ferritin was $>$10,000 with a soluble interleukin-2 level $>$20,000, confirming an HLH diagnosis. She was treated with supportive care, dialysis, ventilation, steroids, Campath (alemtuzumab), and etoposide. She responded poorly, developed toxic epidermal necrolysis, and died.

Conclusion: This case demonstrates the growing overreach of pediatric subspecialists into the young adult age group and the need for internists to be aware of patients with pediatric illnesses that present to the ICU.

150 Cardiac Surgery in an Adolescent with Prekallikrein (Fletcher Factor) Deficiency

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Background: We report the case of an adolescent with abnormal activated coagulation time (ACT) performed by anesthesia just prior to surgery that led to an emergency consult.

Case Report: A previously healthy 15-year-old African American male football player was noted to have a significantly prolonged ACT of 424 in the preoperative area. He had negative personal and family history for bleeding disorders. His physical examination was significant only for the grade 2/6 ejection systolic murmur secondary to atrial septal defect (ASD). Workup showed mildly elevated partial thromboplastin time (PTT) with a weak lupus anticoagulant (LAC). In spite of the disappearance of the LAC, the PTT remained prolonged. Mixing studies were inconsistent. Prothrombin time; international normalized ratio; factor XIII, IV, XI, XII, and XIII; Fitzgerald factor; liver function; and fibrinogen were all normal. Plasma prekallikrein (PK) activity was $<$5% (normal 63%-135%) and confirmed with repeated testing. We recommended fresh frozen plasma 1 hour prior to surgery to normalize his PK and allow for easier monitoring during surgery. Because his ASD was too large to be repaired by interventional methods, he underwent an open cardiac surgery repair without any significant or unusual bleeding.

Conclusion: PK deficiency is a rare heritable disorder with reduced or absent functional PK in the plasma. Since coagulation *in vivo* does not require PK, there is no risk of bleeding in the proband. However, the interference with ACT and PTT could cause significant problems in the postoperative monitoring of anticoagulation routinely used for cardiac surgery. Our patient had no intraoperative or postoperative difficulties and did not require any supplemental support.

151 Successful Treatment of Bleeding Gastric Varices with Balloon-Occlusive Retrograde Transvenous Obliteration in a Non-Transjugular Intrahepatic Portosystemic Shunt Candidate

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Background: When endoscopy fails to control gastric variceal bleeding but a patient is not a candidate for transjugular intrahepatic portosystemic shunt (TIPS), a viable alternative endovascular technique is the balloon-occlusive retrograde transvenous obliteration (BRTO) procedure. It has been shown to be effective in controlling gastric variceal bleeding with low rebleed rates. We report the case of a patient with the chief complaint of hemoptysis and evidence of gastric varices who underwent successful BRTO of gastric varices.

Case Report: A 50-year-old male with a history of heavy alcohol use presented to the emergency department with massive hemoptysis. Esophagogastroduodenoscopy (EGD) revealed gastric varices that had bled and remained a size at risk for rebleed, so the patient was referred to interventional radiology for evaluation. Computed tomography scan showed predominantly large isolated gastric varices draining into the left renal vein through a gastrorenal shunt. Wedged portal venous pressure during hepatic venogram revealed a pre-TIPS gradient of 4 mmHg (significant gradient is generally $>$12 mmHg). Due to the patient's low gradient, hepatic reserve, and anatomy, the consensus was to pursue BRTO of his gastric varices. At 1-month follow-up, EGD showed improvement of varices and resolution of portal gastropathy. At 6-month follow-up, the patient reported no bleeding recurrence and that he had abstained from alcohol.

Conclusion: In unique clinical and anatomical settings, BRTO should be offered for the management of actively bleeding gastric varices or those with impending bleeding to patients who are not TIPS candidates. This case is remarkable for both the radiographic appearance of a gastrorenal shunt, as well as for the rapid resolution of portal gastropathy and optimal control of bleeding gastric varices.

152 Left Gastric Artery Embolization for Acute Arterial Gastric Band Ulcer Hemorrhage After Emergent Transjugular Intrahepatic Portosystemic Shunt Placement

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Background: An urgent phone call was placed to interventional radiology (IR) for an emergent transjugular intrahepatic portosystemic shunt (TIPS) for a 58-year-old male with a medical history of hepatitis C virus, cirrhosis, ascites, and chronic kidney disease who had presented the prior evening with hematemesis and was status post failed endoscopic attempt at banding of a distal esophageal variceal hemorrhage.

Case Report: Emergent TIPS was performed. The patient remained stable in the intensive care unit and was later extubated. On postoperative day 6, the patient suddenly developed massive hematemesis, became unresponsive, and was intubated for airway protection. Emergent bedside ultrasonography revealed patent TIPS. Emergent bedside upper endoscopy revealed brisk distal esophageal arterial hemorrhage. Hematemesis in cirrhotic patients is not always caused by esophageal variceal hemorrhage. When possible, endoscopy should be performed to evaluate the source of the hemorrhage. Venous and arterial hemorrhage management differs in that TIPS revision or embolization of gastric or esophageal varices can be performed to control venous hemorrhage. In arterial esophageal hemorrhage, which can occur due to band erosion through the esophageal mucosa, arterial intervention such as left gastric artery embolization is indicated. We embolized the left gastric artery. The Blakemore drain was kept inflated overnight. Endoscopy revealed no further hemorrhage. The patient remained in stable condition and received a liver transplant several weeks later. He has since been discharged and is doing well.

Conclusion: Emergent TIPS can be a lifesaving procedure for cirrhotic patients with life-threatening variceal hemorrhage that has failed endoscopic control. Recurrent or continued hemorrhage after TIPS is not uncommon, and it is important to verify the cause endoscopically, as non-variceal hemorrhage can coexist in $>$33% of patients. Selecting the appropriate IR intervention is a key component of successful management of these patients and of providing timely emergent potentially lifesaving intervention.

153 Massive Air Embolism Resulting in Ischemic Stroke After Left Ventricular Assist Device Placement

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Background: A 62-year-old male with ischemic cardiomyopathy underwent destination therapy left ventricular assist device (LVAD) placement due to a severely elevated transpulmonary gradient.

Case Report: Duplex scanning of carotid arteries was normal. Heart and LVAD were deaired and confirmed on transesophageal echocardiogram. The patient was weaned off cardiopulmonary bypass and transitioned to LVAD. Nicardipine was used to reduce the blood pressure before removing the aortic cannula. A sudden decrease in blood pressure was noted. A significant amount of air bubbles was noted in the arterial cannula. LVAD was stopped to prevent further air entrapment, and the outflow graft of LVAD was clamped. The patient was placed in a Trendelenburg position, and retrograde deairing of the aorta and arch vessels was carried out by superior vena cava cannulation. The patient was cooled to 32°C to aid in cerebral protection. Postoperatively, the patient remained comatose with lack of response to noxious stimulation on the right side with minimal withdrawal on the left. Computed tomography scan revealed large middle cerebral artery infarct with cerebral edema. Repeat scan demonstrated minimal worsening, but the patient showed no signs of neurologic improvement. Because of his advance directives and poor chance for recovery, comfort measures were initiated, and the patient died.

Conclusion: This is a first case report of systemic air embolization at the time of LVAD implantation. LVAD can create a high suction with negative pressures in the left heart if the preload of the left atrium/left ventricle is inadequate. A sudden decrease in blood pressure due to nicardipine resulted in a rapid fall in preload, causing a suckdown with resulting air being trapped in the LVAD from the environment. Teams should be alert in detection and well versed to take corrective measures, as this complication is associated with high mortality and morbidity.

154 Longest Continuous Percutaneous Left Ventricular Assist Device Support: Impella 5.0

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Background: A 24-year-old African American woman with postpartum cardiomyopathy and home milrinone infusion presented in cardiogenic shock due to infusion catheter infection.

Case Report: The catheter was removed and empiric antibiotic therapy started. Transthoracic echocardiogram (TEE) showed 10% ejection fraction and mobile thrombus in the left atrial appendage. Systemic anticoagulation was started. A few hours later, the patient complained of cold left leg. Doppler examination showed loss of pulses to that extremity. Emergent thrombectomy was performed for limb salvage. Postoperatively, an intraaortic balloon pump (IABP) was placed in the contra lateral leg, resulting in transient hemodynamic improvement. Blood cultures were positive for *Staphylococcus epidermidis* and *Pseudomonas aeruginosa*. Antibiotics were tailored according to sensitivities. TEE demonstrated vegetations on defibrillator leads which were subsequently removed. After a few initial days of stabilization, the patient experienced worsening cardiogenic shock with new liver and renal failure. At this time, an Impella 5.0 was implanted via a right subclavian artery approach. Significant hemodynamic improvement with clinical stabilization resulted, allowing weaning off IABP and inotropes. The patient was gradually weaned off the ventilator. After extensive physical and occupational therapy, her case was re-presented at the multidisciplinary selection committee for possible implantation of a long-term device. After 72 days of Impella 5.0 support, the patient underwent HeartMate II left ventricular assist device implantation. The postoperative course was uncomplicated. She was discharged from the hospital 118 days after her initial presentation. Currently, the patient is doing well and remains on the heart transplant waiting list.

Conclusion: This case is the longest reported continuous use of the Impella 5.0 device. It highlights the potential of the Impella 5.0 device to be a viable mechanical circulatory support (MCS) option in highly select patients with acute decompensated heart failure and cardiogenic shock as a bridge to decision. Additional studies are needed to help identify and risk stratify appropriate patients who will benefit from these MCS devices.

155 Dextroamphetamine Withdrawal in the Elderly in a Postoperative Cardiothoracic Surgery Setting

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Background: As the population of attention deficit disorder (ADD) patients dependent on prescription stimulants grows older, a new pool of individuals with relatively unknown physiologic characteristics is formed. The physiologic response resulting from abrupt cessation of these medications in the elderly population is a topic yet to be thoroughly investigated.

Case Report: A 68-year-old male with coronary artery disease and a 15-year history of ADD treated with dextroamphetamine underwent coronary artery bypass grafting. In preparation for the operation, all home medications other than aspirin were discontinued 24 hours prior to surgery. Twenty-four hours following surgery, the postoperative course was complicated with hemodynamic instability and a significant involuntary tremor of the extremities. The patient reported feeling anxious and agitated. Before the origin of this acute episode was realized, supportive care in the form of oxygen, intravenous fluids, and blood pressure management was started with minimal symptomatic relief. Within a few hours following administration of his home dose of dextroamphetamine, a significant improvement in hemodynamic parameters was noted, along with a noticeable decrease in agitation and anxiety. During the next 48 hours, complete resolution of these symptoms was observed.

Conclusion: The issue of prescription stimulant withdrawal is one that merits further research to avoid similar postoperative complications. As the population of elderly patients on prescription stimulants expands, hospital staff must be able to recognize and expect symptoms of stimulant withdrawal. Only once the effects of chronic stimulant use in ADD patients are further realized can these symptoms be controlled and treated in a standardized manner. Doing so will decrease postoperative complication costs; minimize unnecessary anxiety in patients, their families, and hospital staff; and reduce the relative unpredictability of complications involved in the recovery phase of an already complex surgery.

156 A Novel Use of Transesophageal Echocardiogram to Guide Surgical Myectomy

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Background: Hypertrophic cardiomyopathy (HCM) is a significant medical condition. Afflicted individuals experience symptoms at varying degrees of septal hypertrophy, and without anatomic correction, the end result is a shortened life span. The classic Morrow procedure was described more than 50 years ago, and since that time, few advancements in surgical technique have been made. One major challenge with surgical resection is assessing the adequacy of tissue resection while on cardiopulmonary bypass (CPB). Measures such as weighing the resected tissue and subjective tactile sensation have been used. We present a novel approach to individualize surgical care and reduce perioperative morbidity by utilizing transesophageal echocardiogram (TEE) while on CPB to objectively measure wall thickness.

Case Report: A 55-year-old woman with symptomatic HCM causing mild to moderate obstruction (mean gradient 18 mmHg) presented for surgical myectomy. On initial intraoperative TEE exam, the left ventricle (LV) septal wall measured 1.77 cm which correlated with preoperative imaging studies. Color flow Doppler revealed acceleration of flow below the aortic valve annulus, even with optimal hemodynamic conditions, that was indicative of left ventricular outflow tract obstruction. After initiation of CPB, a myectomy was performed in a staged manner. After initial resection, the LV was filled with cold saline and the right ventricle was filled by partially occluding venous drainage; this allowed for TEE assessment while on CPB. With each successive resection, a TEE assessment was done until a satisfactory morphologic appearance and wall thickness were attained. The post-CPB TEE exam correlated well with the images obtained while on CPB. No acceleration of flow was seen (mean gradient 4 mmHg), even in the context of higher contractility, tachycardia, and low volume state.

Conclusion: This patient presented with an only moderately thickened LV septum. Despite this, she experienced significant symptoms and required myectomy. In an effort to prevent postresection complications, TEE was used as a novel method to guide the extent of resection.

157 Anterior Chest Wall Resection and Reconstruction for the Management of Large Sarcomas

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Background: Large, full-thickness en bloc anterior chest wall resections and subsequent reconstructions have drastically improved morbidity and mortality due to modern surgical technique, materials, and critical care. These resections are generally performed for benign or malignant tumor removal and congenital abnormalities. Major complications are due to infections and mechanical malfunction of the thoracic cage, accounting for 20%-24%.

Case Report: An 81-year-old man presented to the Ochsner Health System clinic with a progressive 5 $\times$ 6 cm right anterior chest mass that had first manifested as pain and rash 9 months prior and was initially thought to be shingles. Chest computed tomography showed a large mediastinal mass associated with bony destruction of the sternal manubrium. Core needle biopsy demonstrated a high-grade spindle cell sarcoma. His case was presented at the Ochsner Multidisciplinary Conference, and the decision was made to proceed with surgery. The patient was taken to the operating room by the thoracic surgery service. A subtotal sternal manubriectomy was performed using the sternotomy saw with dissection of the second and third rib. The total en bloc anterior chest wall defect was 20 $\times$ 8 cm, exposing the pericardium and great vessels. The chest wall was reconstructed using methyl methacrylate bone cement sutured to the first through third ribs and the sternum. The plastic surgery service was consulted for soft tissue coverage with a latissimus dorsi myocutaneous rotational flap. The patient did well postoperatively and was discharged home on postoperative day 7.

Conclusion: The mainstay treatment for soft tissue sarcoma is a multidisciplinary approach to minimize local recurrence and increase long-term survival. The major cause of morbidity and mortality is infection, which may be due to chest wall instability and respiratory insufficiency. Stability may be achieved by restoring the shape and continuity of the thoracic cage which can, in turn, preserve respiratory mechanics.