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C001

Title: A Survey of Runners' Attitudes Toward and Experiences with Minimally Shod Running

Objective: To investigate the perceptions, motivating factors, experiences and injury rates of runners who wear minimalist running shoes (MRS). **Sample:** 566 members of the Chicago Area Runner's Association (CARA). **Methods:** The link to a web-based questionnaire was e-mailed to members of CARA. Data was collected anonymously using SurveyMonkey.com. **Results:** 175 (31%) of respondents have used MRS and the most common motivating factor was to decrease injuries or pain. 51 respondents (31.9%) suffered an injury or pain while wearing MRS, with the most common body part involved being the foot (58.8%). However, 54 respondents had an injury that improved *after* adopting MSRS; the most common area involved was the knee. 120 respondents (69%) are still using MRS and the main reason for stopping using them is development of an injury or pain. The most common areas of pain/injury that caused survey participants to stop using MRS are the foot (56%) and leg (44%). The most common reason that respondents have not tried MRS is a fear of developing an injury. 35% of respondents who have not yet tried MRS are interested in trying them. There were no sex differences with regards to injury rates or injury location. **Conclusion:** The use of MRS is common; however, so is the development of pain and/or injury with their use, with the most common site affected being the foot. Nonetheless, there is also data that they may reduce pain and injury, with the most common site of improvement being the knee. Fear of developing pain or injury is the most common reason runners are reluctant to try MRS.

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C002

Title: Sensory Amplitude Electrical Stimulation Delivered via Glove Electrode During Task-based Exercise improves Arm function in Individuals with Chronic Stroke: A Pilot Study

Summary/Objectives: Sensory amplitude electrical stimulation (SES) and task-specific exercise have been shown to decrease impairment and improve function in the arm following stroke. These two interventions are generally implemented separately. The purpose of this study was to determine the effects of SES delivered by a glove electrode during task-specific exercise on arm movement, function, and sensation in chronic stroke.
Sample: 11 subjects (4 female, 7 male) with chronic arm hemiparesis following stroke. The mean time since stroke onset was 7.2 ± 4.1 years.
Methods: Subjects engaged in task-specific exercise at home for 30 minutes, twice daily, for 5 weeks, while receiving SES via glove electrode. Subjects returned to the lab for supervised practice at least twice during intervention period. Outcome measures administered at pre-test, post-test, and 3-month follow up included: Jebsen-Taylor Hand Function Test (JTHFT), Stroke Rehabilitation Assessment of Movement – UE subscale (STREAM), Motor Activity Log-14 – amount and quality subscales (MAL), and Nottingham Stereognosis Assessment (NSA). Data were analyzed using t tests (JTHFT) and Wilcoxon sign-ranks tests (STREAM, MAL, NSA).
Results: Significant changes were found in group mean pre-post test comparisons on the NSA ($p=0.042$), MAL amount subscale ($p=.047$), and JTHFT (with writing item excluded) ($p=.003$) and in pretest to follow up comparisons on NSA ($p=.027$) and JTHFT (writing item excluded) ($p=0.009$). There was no significant change on the STREAM ($p=1.0$). Individuals with a greater baseline motor capacity determined by STREAM scores ($p=0.048$) and more recent stroke ($p=0.014$) had significantly greater improvements.
Conclusions: Combining task-specific exercise with SES delivered via glove electrode in individuals with chronic stroke resulted in changes in arm sensation and function that were maintained at 3-month follow-up. This study suggests that SES during task-specific exercise may be successfully implemented in a home-based intervention with limited onsite supervision to produce significant changes in arm function in chronic stroke.

C003

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Title: LASIK retreatment: rate of visual complication using flap-lift method

Objective: Epithelial ingrowth can be a visually significant complication of LASIK retreatment. This study's purpose is to assess the rate of epithelial ingrowth after flap-lift LASIK retreatment and secondarily to evaluate risk factors for ingrowth. This study is the largest to date to examine this. Previous studies report frequency of ingrowth more often if retreatment was done over 3 years after primary LASIK, in hyperopic eyes, and with flap creation by microkeratome vs. femtosecond laser. Reported rates of post-retreatment ingrowth in smaller studies have varied, some as high as 41%.

Method: An IRB approved retrospective chart review was performed of over 750 consecutive cases of flap-lift LASIK retreatment performed by a single surgeon (MR) at Northwestern Memorial Faculty Foundation. Time from primary treatment, method of flap creation, best uncorrected and pre-retreatment refractive error, patient age, and incidence of clinically significant ingrowth were recorded. Ingrowth was classified as either requiring observation or surgical management.

Results: The average patient age was 45 years. The average refractive error prior to primary LASIK was -5.29, and prior to retreat was -0.54. The average number of days between primary and retreat was 806 days. The rate of ingrowth after retreatment was as low as 3%. This rate did not differ significantly from rate of ingrowth after primary LASIK in eyes requiring retreatment (1%). Time to retreatment, age, primary and pre-retreatment refractive error, and method of original flap creation did not significantly impact risk of ingrowth.

Conclusion: In this large retrospective study of flap-lift LASIK retreatment, the rate of epithelial ingrowth was low for all patients regardless of timing and method of LASIK. When considering methods for LASIK retreatment, flap-lift may be preferable to photo refractive keratectomy (PRK) in terms of patient comfort and recovery. Physicians should not be deterred from flap-lift as an alternative to PRK out of concern for development of ingrowth.

C004

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Pinpointing neurological causes of acute delirium and its effects on long-term outcomes in intracerebral hemorrhage patients

Kelly L. Brandstatt, Andrew Naidech, Michael Berman, and Joel L. Voss

Summary
Periods of delirium following acute brain injury are characterized by shifts in baseline mental status, inattention, disorganized thinking, and by disrupted conscious awareness. Delirium symptoms predict poor functional outcomes, yet there is no known neurological basis for delirium.

Sample/Methods
We localized brain damage that caused delirium using acute CT scans from 80 patients with intracerebral hemorrhage (ICH) among Neuro/Spine-Intensive Care Unit (Neuro/Spine-ICU) patients at Northwestern Memorial Hospital. These patients were scored for delirium using the Confusion Assessment Method for the ICU during hospitalization. Voxel-based lesion-symptom mapping was performed using delirium scores and CT hematoma locations.

Results
Hematomas occupied the thalamus and basal ganglia in the majority of patients, irrespective of delirium scores. Hematoma of the right cortical white matter, including superior longitudinal fasciculus, and also of the parahippocampal gyrus, was uniquely associated with delirium (statistical maps used a corrected $P<0.05$ threshold). Damage to long-range cortical white-matter connections due to the neurotoxic effects of hematoma was therefore likely responsible for disruptions of conscious awareness. Acute delirium was also associated with poorer self- and/or informant-reported executive function at 12-month follow-up (measured using Neuro-Quality of Life measures), suggesting that disruptions of cortical connectivity persistently disrupt executive function in addition to producing acutely impaired conscious awareness.

Conclusions
These findings provide preliminary support for the use of clinical CT imaging to prognosticate acute symptoms and long-term outcomes in stroke. These findings establish a neurologic basis for delirium. Future studies will be required to establish sensitivity and selectivity for the goal of developing individualized treatment plans using acute neuroimaging.

C005

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Title: Lumbopelvic Physical Exam Findings of Greater Trochanteric Pain Syndrome: More Than Just Bursitis

Summary: Greater Trochanteric Pain Syndrome (GTPS) is characterized by pain around the greater trochanter and affects 10-25% of the population. Historically treated as a bursitis, the area around the greater trochanter is associated with a wide range of pathologies, including iliotibial band syndrome, hip osteoarthritis, and gluteal muscle tears. This suggests that GTPS is likely a spectrum disorder and more likely represents a broader biomechanical problem.

Objective: We believe that patients with GTPS will also have other lumbopelvic physical exam findings that could help identify other co-existing, if not causative, pathologies. Our primary hypothesis is that subjects with GTPS will have significantly more physical exam findings compared to subjects with lumbopelvic pain (LP) and healthy control (HC) subjects. Our secondary hypothesis is that subjects with GTPS will have impaired hip range of motion (ROM) compared to the other two groups.

Sample: A total of 79 subjects were recruited from the Rehabilitation Institute of Chicago's Sports & Spine Center, an academic, outpatient musculoskeletal practice, consisting of 19 GTPS subjects, 33 LP, and 27 HC.

Methods: Two fellowship-trained sports medicine physiatrists performed a battery of standard physical exam maneuvers designed for the hip, low back, and pelvis on three sets of subjects: 1) subjects with GTPS, 2) subjects with other LP, and 3) HC subjects. Hip ROM was assessed using a goniometer and palpation was calibrated by a dolorimeter. Subjects with multiple tender points in other body areas were excluded.

Results: Subjects with GTPS were significantly older, shorter, and more often female compared to HC and LP subjects. There was no difference amongst groups for hip ROM in all planes between the three groups. Lumbar spinous process palpation ($p = 0.004$), sacral sulcus palpation of the affected side ($p = 0.001$), and FABER test of the unaffected side ($p = 0.010$), were present in significantly more GTPS subjects compared to LP subjects.

Conclusions: Subjects with GTPS are more likely to have pain over the sacral sulcus and lumbar spinous processes, and a positive FABER on the unaffected side. These findings support GTPS as a spectrum disorder and not simply an isolated bursitis of the greater trochanter.

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C006

Title: Virtual Reality Job Interview Training in Adults with Autism Spectrum Disorder

Objective: To test the feasibility and efficacy of Virtual Reality Job Interview Training (VR-JIT) among adults with autism spectrum disorder (ASD).

Sample: Participants (ages 18-31) included 26 individuals with ASD and were recruited through advertisements at community-based service providers, local universities, community-based support groups and online. Participants were randomized to VR-JIT (n=16) or treatment as usual (TAU) (n=10) groups.

Methods: Single-blinded randomized controlled trial. VR-JIT consisted of simulated job interviews with a virtual character and didactic training via a computer program. Primary outcome measures were job interview role-play performance and self-reported self-confidence.

Results: Participants attended 90% of lab-based training sessions and found VR-JIT easy-to-use, enjoyable, and they felt prepared for future interviews. VR-JIT participants had greater improvement during live standardized job interview role-play performances than TAU participants (p=0.046). A similar pattern was observed for self-reported self-confidence at a trend level (p=0.060). VR-JIT simulation performance scores increased over time (R-Squared=0.83).

Conclusions: This study presents preliminary evidence that the use of VR-JIT may be a feasible and efficacious tool to improve job interview skills for adults with ASD. This training system uses a computerized virtual reality platform (internet or desktop), and as such, is widely accessible to families, support groups, and service providers.

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C007

Title: Feasibility and Efficacy of Virtual Reality Job Interview Training for Adults with Psychiatric Disabilities

Objective: To test the feasibility and efficacy of Virtual Reality Job Interview Training (VR-JIT) among adults with psychiatric disabilities.

Sample: Participants included 37 individuals with a psychiatric disability recruited through advertisements at community-based service providers, local universities, and community-based support groups. Participants were randomized to VR-JIT (n=25) or treatment as usual (TAU) (n=12) groups.

Methods: Single-blinded randomized controlled trial. VR-JIT consisted of computer-simulated job interviews with a virtual interviewer and didactic training. The primary outcome measures assessing feasibility and efficacy of VR-JIT were performance on job interview role-plays and self-reported self-confidence in job interviewing.

Results: Participants attended 95% of lab-based training sessions and reported that VR-JIT was easy-to-use, enjoyable, and increased their preparedness for future job interviews. The VR-JIT group demonstrated significant improvements in job interview role-play performance ($p<0.05$) and self-confidence in job interviewing ratings ($p<0.05$) between baseline and follow-up as compared to the TAU group. VR-JIT simulation performance scores increased over time (R-Squared=.65).

Conclusions: VR-JIT may be feasible and efficacious for improving job interview skills and self-confidence in job interviewing, among individuals with psychiatric disabilities. Future research with larger samples may clarify VR-JIT's generalizability across psychiatric groups by examining whether symptoms or pharmacological treatment impact the efficacy of this intervention.

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Title: Risk factors for perioperative complications after Le Fort colpocleisis

Summary: Given the aging United States population, steep increases in pelvic floor dysfunction and need for surgical management in elderly patients are anticipated. Colpocleisis is a vaginal obliterative procedure for treatment of advanced pelvic organ prolapse that carries benefits of shorter operative time, lower blood loss, and faster recovery compared with reconstructive urogynecologic procedures. These benefits make colpocleisis an excellent approach for patients who are otherwise not ideal surgical candidates, including elderly women and those with complex medical conditions. Colpocleisis is associated with high rates of anatomic success and patient satisfaction. Single-site case series have reported complication rates after colpocleisis ranging from 16.8% to 19.1% and mortality rates of 0 to 1.3%. In order to better characterize complications associated with colpocleisis in a large, generalizable population of women, we utilized the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database to assess complication rates and risk factors for complications after colpocleisis.

Objective: To determine rates of and risk factors for complications after colpocleisis using the ACS-NSQIP database.

Sample: Women undergoing Le Fort colpocleisis from 2005 to 2011 in the ACS-NSQIP database.

Methods: Patients were identified in NSQIP by CPT code. Primary outcomes were 30-day complication rates. Secondary outcomes were risk factors for complications and impact of age and concomitant sling procedures on morbidity. Clinical and procedural characteristics were analyzed as potential risk factors for complications using χ^2 and one-way ANOVA tests.

Results: Two hundred eighty-three women underwent colpocleisis during the study period. Twenty-three women (8.1%) experienced complications. The most common complication was urinary tract infection (UTI, 6.4%). There was one death, for a mortality rate of 0.4%. Increased complications were associated with age < 75 years (p=0.030), chronic obstructive pulmonary disease (p=0.029), disseminated cancer (p=0.030), and open wound infection (p=0.022). Six patients (2.1%) required return to the operating room within 30 days. Complication rates did not differ based on operative time (p=0.783), inpatient status (p=0.236), resident involvement (p=0.352), or concomitant sling placement (p=0.808). Women ≥ 75 years old had a trend toward fewer overall complications (7% versus 15.7%, p=0.086). Women undergoing colpocleisis without (n=191) and with (n=92) concomitant sling had similar baseline characteristics. Colpocleisis without and with sling had similar rates of complications (8.9% versus 9.8%, p=0.97), UTI (5.8% versus 7.6%, p=0.55), return to the OR (2.1% versus 2.2%, p=0.97), and mortality (0% versus 1.1%, p=0.15).

Conclusions: Mortality and complication rates after colpocleisis are low, with UTI being the most common postoperative complication. Concomitant sling placement does not increase 30-day complication rates.

C009

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Title:
Safety of Short-Term Use of Dabigatran or Rivaroxaban for Direct Current Cardioversion in Patients with Atrial Fibrillation and Atrial Flutter

Summary:
Direct current cardioversion (DCCV) for persistent atrial fibrillation/atrial flutter carries a risk of thromboembolic events. Therapeutic anticoagulation with warfarin is recommended for 3-4 weeks before and 4 weeks after cardioversion to reduce thromboembolic events; however, the safety of short-term anticoagulation with the novel oral anticoagulants (Dabigatran and Rivaroxaban) (NOAC) prior to direct current cardioversion has not been assessed.

Objective:
To assess thromboembolic events in patients anticoagulated with novel anticoagulants (Dabigatran and Rivaroxaban) prior to DCCV.

Methods:
A retrospective cohort study was performed on all patients undergoing elective DCCV for atrial fibrillation/flutter at Northwestern Memorial Hospital from 6/1/2012 to 9/30/2013. Inclusion criteria included patients on any of the NOACs for 21-60 days prior to DCCV and successful DCCV to sinus rhythm. Patients were followed for a minimum of 60 days post DCCV to evaluate for thromboembolic events including stroke, transient ischemic attack, systemic emboli, and death.

Results:
In total, 53 patients (47 male, 89%) (Age 65 +/- 10, median 66 years) were evaluated. Agents used were Dabigatran (30, 57%) and Rivaroxaban (23, 43%) for an average of 38 +/- 9 days prior to cardioversion. The mean CHADS2 score was 1.2 +/- 1.1 (Score = 0, 26%; 1, 43%; 2, 17%; $\geq$ 3, 13%). Eleven patients (21%) had a trans-esophageal echocardiogram (TEE) prior to their DCCV; all showed no thrombus. No patients were found to have episodes of TE within 60 days of DCCV. No patients were found to have major bleeding events.

Conclusions:
The use of short-term Dabigatran or Rivaroxaban therapy for DCCV of AF appears safe.

C010

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Title: An Obesity Genetic Risk Score Improves Prediction of LGA Birth Outcome

Summary: Macrosomic infants are at increased risk for adverse longterm metabolic outcomes including obesity and type 2 diabetes. Developing approaches to predict large for gestational age birth (LGA; birthweight>90th percentile) may help prevent these outcomes.

Objective: To determine if genes associated with obesity-related traits in adults are associated with newborn adiposity and whether a genetic risk score (GRS) specific to ancestry can predict LGA birth.

Sample/Methods: Single nucleotide polymorphisms (SNPs) in 40 genomic regions associated with adult body mass index and/or waist to hip ratio were tested for association with birthweight (BW) and sum of skinfolds (SSF) among a diverse cohort of newborns from the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) Study, an epidemiologic study which examined association of glucose levels during pregnancy and risk of adverse fetal outcomes. GRS's for BW and SSF specific for each ancestry (1095 Afro-Caribbean, 1363 Northern European, 616 Mexican American, and 1207 Thai) were calculated using the most highly associated SNP for each ancestry group in genomic regions with at least one SNP associated with BW and/or SSF in at least one ancestry group or meta-analyses.

Results: After adjustment for ancestry, gender, gestational age at delivery, parity, maternal smoking status and alcohol intake, and maternal age, body mass index, height, and blood pressure, 25 and 22 independent SNPs were associated with BW and newborn SSF, respectively ($p<0.001$). Meta-analyses identified 10 SNPs associated with BW or newborn SSF ($p<0.001$). The GRS for each HAPO ancestry group was highly associated with both BW and SSF as continuous variables in linear regression models across all HAPO ancestries ($p<1.6 \times 10^{-19}$). Application of the GRS improved prediction of BW>90th percentile (LGA) and SSF>90th percentile when added to a baseline model that included the covariates listed above as well as maternal glucose.

Conclusions: The genetic architecture of adult obesity-related traits and newborn birthweight and adiposity overlap in part. A GRS comprised of SNPs in loci associated with adult obesity-related traits is significantly associated with newborn size and can improve prediction of LGA birth outcome beyond maternal glucose, a well-established predictor of LGA birth and newborn adiposity.

C011

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Title: The effect of trunk flexion on lower limb kinetics of able-bodied gait.

Summary
Alterations in trunk flexion are associated with aging, spinal pathologies, and neuromuscular disorders. For example, the pathology known as flatback causes a forward inclination of the trunk (referred to as positive sagittal spine balance) due to abnormal reductions in lumbar lordosis and may induce crouch gait (i.e., excessive hip and knee flexion during stance). While these compensations may be necessary to maintain the body center-of-mass within the base of support for upright balance, they place high demand on muscles and increase energy expenditure. The unique joint configuration resulting from sustained trunk flexion and increase in metabolic cost of crouch gait suggests changes in joint kinetics compared to normal posture. Although the effects of varying levels of sustained trunk flexion on lower limb kinematics has been described, little is known of the effects on joint kinetics.

Objective
The purpose of this study was to investigate the effect of sustained trunk flexion on lower limb kinetics of able-bodied gait, facilitating understanding of the effects of spinal pathologies.

Sample
Fourteen able-bodied participants (7 male, 7 female, 26±3 years, 174.2±9.9 cm, 72.3±12.1 kg).

Methods
Participants walked at their self-selected normal walking speed under three trunk flexion conditions: 1) self-selected upright, 2) 25 ± 7° trunk flexion, and 3) 50 ± 7° trunk flexion. Participants were asked to bend from the hips to achieve their target trunk flexion and auditory feedback was provided to assist with maintaining each trunk flexion angle within the specified range. Kinematic and kinetic data were collected with a digital motion capture system and walkway-embedded forceplates, respectively. Joint kinetics were estimated using inverse dynamics analysis, and joint work as an estimate of mechanical energy absorption or generation during stance was calculated by integrating joint power with respect to time.

Results
Walking with increasing trunk flexion decreased peak ankle plantar flexor moments and increased ankle energy absorption during stance. Sustained knee flexion during mid- and terminal stance and decreased knee flexor moments were observed with increased trunk flexion, but knee energy absorption/generation remained unchanged across postures. Increased trunk flexion placed significant demand on the hip extensors, thus considerably increasing peak hip extensor moments. Accordingly, hip energy generation for the intermediate and maximum trunk flexion condition were 2 and 3 times greater than the upright condition, respectively.

Conclusions
Walking with increasing trunk flexion induces crouch gait in able-bodied individuals and places significant demand on the hip extensors to support the anteriorly displaced head-arms and trunk mass. The direct relationship between trunk flexion and energy absorption and generation at the ankle and hip joints, respectively, suggest increased muscular demand during gait. These results support clinical observations that individuals with pathology-induced positive sagittal spine balance are susceptible to increased metabolic cost and rapid muscular fatigue, qualities that are likely related to the low fitness levels and poor clinical outcomes reported for this group.

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C012

Title: Moderators and Predictors of Treatment Response in Depressed Youth Following Maintenance Treatment

Summary: Major depressive disorder (MDD) is characterized by a constellation of symptoms, including severely depressed mood that persists for at least two weeks. MDD is common. For adolescents , the lifetime prevalence of MDD and/or dysthymia is 11.2%.The human and economic costs of depression are great. To facilitate the treatment and research of MDD, it is imperative to understand which adolescents are most likely to benefit for different types of treatment so that factors undermining treatment success can be understood and addressed.
Objective: This study investigated pretreatment variables associated with depression severity scores in adolescents following maintenance treatment for major depressive disorder (MDD).
Sample: Data for this study was derived from the Treatment for Adolescents with Depression Study (TADS), a RCT trial for adolescents with MDD. All participants met criteria for MDD and were randomly assigned to either a placebo, cognitive behavioral therapy (CBT only), fluoxetine (MED only), or combined CBT and fluoxetine (COMB). Treatment included 12 weeks of randomized treatment, 6 weeks of graduated maintenance treatment, and 18 weeks of maintenance treatment. Only active treatment conditions were used for this analysis.
Methods: Measures: Candidate variables were those identified by Curry et al., 2006 for their predictor/moderator analyses of the TADS sample following acute (12 week) treatment. Analysis: General linear models were conducted for each candidate variable. The dependent variable was depression severity as measured by the Children's Depression Rating Scale – Revised (CDRS-R) administered at the conclusion of the 36-week treatment. To be consistent with previous efficacy (TADS, 2004) and predictor/moderator analyses (Curry et al., 2006), site was included as a fixed factor to adjust for possible site effects. Variables were considered moderators if there existed a significant variable x site x treatment interaction effect. Predictors were defined as variables that yielded a significant variable x site interaction but for which the interaction with treatment condition was not significant. If the moderator was a continuous variable, it was dichotomized based on a meaningful cut-off score. To ensure the replication of methods used by Curry et al., 2006, the analyses conducted with the CDRS 12 week data (all 4 treatment conditions) as the dependent variable were first replicated. It is noteworthy that all results were replicated with the exception of four variables. However, the significance/nonsignificance of these variables were successfully replicated.
Results: Predictor analyses demonstrated that adolescents who had shorter depressive episodes when treatment began, better levels of functioning, less suicidal ideation, and a greater expectancy for treatment at baseline were more likely to have lower depression severity scores following 36 weeks of treatment, regardless of treatment modality. Adolescents with low depression severity scores at baseline were more likely to have lower depression severity at week 36 if they received both medication and cognitive behavior therapy (CBT).
Conclusions: Predictor analyses suggested that adolescents who had shorter depressive episodes when treatment began, better levels of functioning, less suicidal ideation, less hopelessness, and a greater expectancy for treatment at baseline were more likely to have lower depression severity scores following 36 weeks of treatment, regardless of treatment modality. Moderator analyses demonstrated that adolescents with low depression severity scores at baseline were more likely to have lower depression severity at week 36 if they received both medication and cognitive behavior therapy (COMB). Although family income initially appeared to be a moderator, once it was dichotomized, it no longer exerted a moderating effect. Clinical Implications: These findings highlight the importance of considering various aspects of an adolescent's initial presentation when considering which treatment to employ. They also illustrate which adolescents may be candidates for longer term and more rigorous treatment. Research Implications: This study also suggests that length of depressive episode, suicidal ideation, impaired functioning, and the presence of comorbidities may be areas that contribute to poor response following acute and maintenance treatment. Future studies can use these results to target and overcome these barriers to treatment success.

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C013

Title: Cognitive and affective empathy contribute to poor social functioning in schizophrenia: Evidence from a new self-report measure of empathy

Summary: Recent research suggests that individuals with schizophrenia show deficits in empathy, the ability to understand and share the affective states of others, which uniquely contribute to poor social functioning. However, the vast majority of these studies used self-report measures developed several decades ago that do not align well with contemporary models of empathy and its component processes.

Objective: This study evaluated empathy and its relationship to social functioning in schizophrenia using a recently developed measure that was designed to assess empathy's two main sub-components, cognitive and affective empathy.

Sample: Individuals with schizophrenia (n=52) and healthy controls (n=37).

Methods: All participants completed the Questionnaire of Cognitive and Affective Empathy (QCAE) (Reniers et al., 2011), which includes two subscales that comprise a cognitive empathy scale and three that comprise an affective empathy scale, as well as a neurocognitive test battery, clinical ratings of psychopathology, and measures of social functioning. We assessed between-group differences on the QCAE, as well as relationships between the QCAE subscales and neurocognition, symptoms, and social functioning within the schizophrenia group.

Results: The schizophrenia group reported significantly lower cognitive empathy than controls. Group differences on the QCAE were largely driven by lower scores on the online simulation subscale. Cognitive empathy explained significant variance in social functioning after accounting for global neurocognition and clinical symptoms.

Conclusions: The observed impairment in cognitive empathy among individuals with schizophrenia is consistent with prior studies. Impairments in cognitive empathy were associated with poor social functioning even after accounting for neurocognitive function and symptoms. This finding provides additional support that cognitive empathy, assessed with the novel QCAE, is uniquely related to social functioning. Thus, interventions undergoing development to improve recovery for individuals with schizophrenia might consider the importance of cognitive empathy as a potential treatment target.

C014

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Title: Patient satisfaction does not correlate with established colonoscopy quality indicators

Background: Quality metrics for colonoscopy are increasingly being measured and reported as procedure quality correlates with its effectiveness in reducing colorectal cancer incidence and mortality. Quality indicators include cecal intubation rate, withdrawal time (WT), and adenoma detection rate (ADR). Patient satisfaction ratings (PSRs) are also publicly reported and may be tied to reimbursement in clinical practice. PSRs are additionally being utilized in concert with other measures to determine provider performance and health-care quality. The objective of our study was to investigate whether patient satisfaction correlates with established indicators of colonoscopy quality, an area that has not previously been studied.

Methods: We performed a retrospective Institutional Review Board approved review of PSRs and colonoscopy quality for endoscopists at a single-center tertiary care teaching institution from September 2012 to August 2013. All patients undergoing endoscopic procedures at our institution are asked to complete an 11-question outpatient validated survey assessing their procedure experience. The PSR is measured by calculating the percent of responses with a score of 5 (representing “very good”) on a scale of 1 to 5. We measured overall correlation coefficients (r) of patient satisfaction with ADR, WT and cecal intubation rate.

Results: 1,688 patient satisfaction surveys were collected and 6,761 screening colonoscopies were performed. Mean screening colonoscopy volume per physician was 687. 21 endoscopists (5F:16M) were included in this study. Median time in clinical practice after training was 15 years, and did not correlate with patient satisfaction (r -0.11). Overall mean PSR was 75.6% (64-84%) ± 5.5%. Our institutional benchmark for PSR was 76% in an effort to exceed scores from previous years. 10 physicians received PSRs >76%. 20% of female versus 62.5% of male physicians received a PSR >76% (p=0.1). 50% of physicians in private practice compared to 54.5% in an academic practice received PSRs >76% (p=0.8). Mean ADR, WT, and cecal intubation rate were 29%, 10.5 minutes, and 98.6% respectively. There was weak or no correlation between PSRs and ADR (r 0.22), WT (r 0.02), or cecal intubation rate (r 0.24). We found a strong positive correlation between ADR and WT (r 0.60). (Table 1)

Conclusions: Patient satisfaction does not correlate with established colonoscopy quality indicators. Our analyses did, however, reproduce a correlation between widely accepted quality indicators such as ADR and WT. While PSRs may reflect an institution’s ability to provide good service as part of the patient experience, our study challenges their role as a measure of colonoscopy quality and further work should be done before patient satisfaction is promoted as a surrogate measure for colonoscopy quality.

Table 1: Colonoscopy variables and their correlation with PSRs.

Variable	Mean (Range) ± SD	Correlation with PSRs (r)
ADR	29.2 (11.5-51.2) ± 10.7	0.22
Insertion time (minutes)	7 (4.9-11.2) ± 1.8	-0.19
WT (minutes)	10.5 (3.1-19.2) ± 4.5	0.02
Cecal Intubation (%)	98.6 (96.0-99.0) ±1.18	0.24

C015

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Title: Significant Acquisition Dose Reduction Maintains Diagnostic Quality of Biplane Cerebral Digital Subtraction Angiography

Summary:
Digital subtraction angiography (DSA) remains the gold standard modality for evaluation, diagnosis, and treatment planning of several intracranial vascular abnormalities. However, patient radiation dose can be considerable with both diagnostic and especially complex neurointerventional procedures. Modern biplane flat-detector angiography units provide several possibilities for automatic dose reduction by modifying X-ray tube potential, current, pulse width, and filtration thickness.

Objectives:
We aimed to investigate the feasibility of reducing the radiation exposure dose in diagnostic DSA examinations while preserving the overall image quality for diagnostic purposes.

Sample:
Following IRB approval and informed consent, a prospective study was performed on patients undergoing diagnostic cerebral DSA using biplane flat detector rotational fluoroscopy and angiography unit (Artis zee/zeego, Siemens).

Methods:
DSA images were acquired using a predefined manufacturer standard DSA program by selecting detector dose of 3.6 µGy/ frame (mean typical tube voltage (TTV): 80.6 kVP, mean tube current (TC): 230.6 mA, using focal spot size (FS) of 0.6 and inherent filtration) and reduced DSA detector dose of 1.2 µGy/frame (mean TTV: 73.6 kVP, mean TC: 153.5 mA, using FS of 0.3 with additional 0.1/0.2 copper filter) dose protocols for each patient. Using identical contrast agent, contrast injection rate, and fluoroscopy time, randomly selected internal carotid arteries or vertebral arteries and their contralateral equivalent arteries were injected to obtain standard radiation dose and low radiation dose AP and lateral DSA images, respectively. Images were not included for image quality assessment if any significant technical issue and/or flow limiting vascular stenosis/occlusion, or steal phenomenon from AV shunts were present. Image quality assessment was performed independently by two neurointerventionalists on a de-identified PACS workstation. A 5 point scale (5: Very good: excellent large and small vessel visualization; 4: Good: excellent large vessel and minimal compromise of small vessel visualization; 3: Average: diagnostic value for large vessel, but compromised small vessel visualization 2:Poor: compromised large and small vessel visualization; 1:Non-diagnostic) was used for qualitative evaluation of arterial, capillary, and venous phases of DSA images respectively. The total score was defined as the overall diagnostic value. Paired sample t-test and Wilcoxon's signed rank test compared the kerma-area product (KAP) and scores assigned to image quality parameters, respectively. P value <0.05 was considered statistically significant.

Results:
Twenty three DSA image series were obtained from 9 patients (8M/1F, mean age: 65.9 ±9.16) undergoing diagnostic DSA. Mean KAP was significantly reduced by 60% or 2.5 fold (1408.90 ± 419.18 µGy/m2 versus 557.08 ± 214.56 µGy/m2, P <0.0001). No significant difference was observed between image quality scores assigned by the observers while assessing arterial (observer 1: P=1.0; observer 2: P=0.24), capillary (observer 1: P=0.54; observer 2: P=0.3), venous (observer 1: P=0.14; observer2: P=0.7) phases, and overall diagnostic value (observer1: P=0.34; observer 2: P=0.8).

Conclusions:
Radiation exposure dose can be significantly reduced without compromising image quality for diagnostic purposes in cerebral DSA studies.

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C016

Title: **Implementing Changes in Opioid Prescribing: Applying REMS Principles to Clinical Practice**

Summary: Following the release of the Risk Evaluation and Mitigation Strategies (REMS) from the FDA regarding Long Acting Opioids, it was determined that an overall evaluation of the prescribing policies and procedures of our large, urban pain management clinic were needed. An initial one week screening of clinic phone calls to the nursing staff revealed a large number of prescription refill requests without a face-to-face visit. Many of these requests were for Schedule II and Schedule III analgesics. This led to a change in the treatment pathways and policies of the clinic for the refill of Controlled Substances. The goals were to: 1) Limit phone/portal requests for Controlled Substance medications to only for emergencies and 2) Have all patients with continuous use of opioid medications return to clinic to update their patient agreements, update Urine Drug Screening (UDS), assess risks to the patient based on the dosage and combination of medication prescribed, and assess risk for aberrant behaviors. This information would then be utilized to determine the frequency of future clinic visits

Methods: Baseline data of the ongoing practice was obtained over a four week period prior to implementing the changes of requiring patients to attend face-to-face visits. The nursing staff recorded each patient request for medication (phone and portal), type of medications requested, prescribed or denied, and whether the prescriptions were sent to the pharmacy or the patient. The patients were notified when calling in for their prescriptions that they would need to be scheduled and seen for their next prescription refill!

Results: The baseline showed a daily average of 18.2 patient requests for medication with 58% for Level II, 23% for Level III, and 5% for both Level II and Level III Controlled Substances. During this timeframe there were 7 physicians in clinic at various times to equal 4.0 FTE of coverage for the evaluation and treatment of new and follow-up patients. There was a daily average of 14.15 follow-up visits during baseline. The following two months showed declines in average daily patient medication requests (M=16.4, M=14.25, respectively) and slight increases in daily average follow-up visits (M=15.55 and M=15.75).

Conclusions: The transition process occurred slower than expected due to: 1) Limited Scheduling availability for the most senior physicians who have the largest patient populations; 2) personnel scheduling patients outside the needed follow-up timeframes as they emphasized customer satisfaction principles; 3) Limited compliance by patients to attend follow-up visits due to previously practice pattern; and 4) Limited enforcement of requirement by physicians and nursing staff due to concerns for patient safety without the medications and potential withdrawal issues.

C017

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Title: Looking and Language: Clinically Meaningful Links in Autism Spectrum Disorders

Summary: Pragmatic (i.e. social) language deficits are universally observed in autism spectrum disorder (ASD), but less is known about the cognitive mechanisms underlying these impairments. Prior research suggests that reduced visual attention to social stimuli may contribute to social impairment in ASD. In a novel approach to examining cognitive mechanisms underlying pragmatic deficits in ASD, we examined relationships between visual processing and language *during* communication. We recorded the eye-gaze of individuals with ASD and controls during narration of a wordless picture book, and used a novel computational-linguistic method, Latent Semantic Analysis, to measure narrative quality. Individuals with ASD demonstrated reduced attention to social aspects of the scenes and also produced lower quality narratives. Further, atypical fixation patterns predicted lower narrative quality.

Objectives: The objectives of this research were to 1) identify differences in how individuals with ASD viewed narrative stimuli, 2) quantify narrative ability using a novel computational linguistic tool, 3) Examine how differences in gaze relate to narrative quality and 4) apply findings to clinical work with individuals with ASD.

Sample: Participants included 57 individuals with ASD and 29 age-matched controls.

Methods: Using TobiiX60 software, we recorded the eye gaze of participants as they narrated the wordless picture book, *Frog, where are you?* Percent of fixations on areas of interest (i.e., socially salient features, and elements critical to the story's theme) were calculated on each page and averaged across the narrative. Narrative quality was measured using Latent Semantic Analysis (LSA), a computational-linguistic tool that provided a quantitative measure of the conceptual similarity of each participant's narrative to four core narratives that best reflected typical narration of the Frog Story.

Results: Individuals with ASD fixated significantly proportionally less to the following: animate objects (t=-2.475, p=.026, r=.26), the story's protagonists (t=2.1, p<.05, r= .23), faces (t=2.26, p<.05, r=.24), and the protagonists' focus of attention (t=2.49, p<.025, r=.26). Individuals with ASD fixated significantly more on irrelevant aspects of the scenes (t=4.6, p<.001, r=.45). Individuals with also ASD told significantly less similar (i.e., lower quality) narratives than controls (t=2.182, p<.01, r=.23). Overall narrative similarity was positively correlated with fixation on characters' focus of attention for individuals with ASD (r=.275, p<.05), and negatively correlated with fixations on irrelevant aspects of the scene for controls (r=-.418, p<.05). Interestingly, atypical visual processing was most pronounced in episodes where narrative similarity scores were lowest for individuals with ASD.

Conclusions: Findings suggest that LSA may be a valid quantitative measure of narrative similarity that could be fruitfully applied in clinical and research settings. Further, our results indicate that differences in visual processing may relate to pragmatic language impairments in ASD. In particular, the tendency to track main characters' gaze direction (i.e., identifying the "focus of attention") was most predictive of narrative quality among in individuals with ASD. These findings have important implications for understanding mechanisms underlying language impairment in ASD as well as designing clinical interventions for these individuals.

C018

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Title: Characteristics of Solid Organ Transplant Recipients that Seek Emergency Department Care in the First Year after Transplantation

Summary: Transplant patients have complex management considerations in the post-operative period due to the extent of the surgical procedure, concurrent immunosuppression, and importance of graft survival. Previous pilot studies suggest that transplant patients frequently seek emergency department (ED) care in the first year following transplant, have high ED resource utilization rates, and are frequently admitted.

Objective: The aim of this study was to describe the ED utilization of transplant recipients at a large, high-volume urban transplant center.

Methods: A retrospective cohort analysis of the Northwestern Electronic Data Warehouse was performed to identify liver, kidney, pancreas and multi-organ recipients >18 years who were transplanted between January 1, 2008 and January 1, 2012 at Northwestern Memorial Hospital and who sought care in the ED within one year of transplantation.

Results: Of 2003 transplants performed, 712 (35.5%) transplant patients made 1343 visits to the ED within the first year after transplant; 41% had more than one ED visit (range 1-14). Of the included patients, 58% received a kidney transplant, 28% received a liver transplant, and 14% had a multi-organ transplant. Patients were identified as transplant recipients at the time of ED triage in 27% of visits. Median postoperative day at ED presentation was 61 (range 2-365). In total, 446 (36.4%) visits occurred within 30 days and 249 (28.0%) visits occurred within two weeks of discharge from the index hospitalization. The most common chief complaints were gastroenterological (30.3%), infection-related (18.2%), and abnormal laboratory values or vital signs (16.4%); Sixty-eight percent of ED visits resulted in admission, and 34% of subsequent admissions were less than 24 hours in duration. The chance of subsequent admission after ED care for patients experiencing an ED length-of-stay between 3 and 6 hours, between 6 and 10 hours, and greater than 10 hours was similar (71%, 75%, and 68% admission rate respectively). There was no correlation between rates of ED presentation and day of the week or hour of the day.

Conclusions: Transplant recipients often seek ED care in the first year post-transplant, most frequently within the first 60 postoperative days and independent of day of week or business hours. Patients are frequently admitted after ED evaluation, particularly if the ED length-of-stay is greater than 3 hours. These data suggest that further studies are indicated to understand why these trends occur and how the ED evaluation of transplant patients can be optimized.

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C019

Title: Prevalence of Vitamin D Deficiency in Children and Young Adults with Disability

Summary:
Vitamin D is necessary for the absorption of calcium and the healthy mineralization of bone. A majority of vitamin D is made in the skin after exposure to ultraviolet radiation, while the remainder is absorbed from dietary intake. Many individuals with disabilities receive decreased amounts of sun exposure due to impaired mobility, and therefore may be at increased risk of vitamin D deficiency.

Objective:
The purpose of this study was to determine the prevalence of vitamin D deficiency in children and young adults with disabilities and to determine if correlations exist between vitamin D levels and weight bearing status, history of fractures, age, and use of anti-epileptics in this patient population.

Sample:
A random sample of patients aged 2 to 35 years old who had 25-hydroxyl vitamin D levels drawn at a free standing rehabilitation hospital.

Methods:
A retrospective chart review was conducted using a random sample of patients provided by the medical records department of a free standing rehabilitation hospital. Inclusion criteria was any patient between the ages of 2 to 35 years old who had 25-hydroxyl vitamin D levels drawn from April 2007 to April 2012 with results available in the institution's electronic medical record.

Results:
Eighty-six charts were reviewed in total. The mean patient age was 19 years old. Forty-three of the patients had cerebral palsy, 12 had spinal cord injuries, 6 had spina bifida, and the remainder held various diagnoses. Fifty-one of the 86 patients (59%) had laboratory evidence of abnormal 25-hydroxyl vitamin D levels. Twenty-five patients had vitamin D deficiency (< 20 ng/mL), while 26 patients had evidence of vitamin D insufficiency (21-29 ng/mL). There was no statistically significant correlation between low levels of vitamin D and recorded fractures, use of anti-epileptics, age in the cerebral palsy population, or ambulation.

Conclusions:
There is a high prevalence (59%) of vitamin D insufficiency and deficiency in children and young adults with disabilities. Given the high prevalence of vitamin D deficiency and the associated adverse effects on health, universal testing of vitamin D levels or universal vitamin D supplementation may be indicated in this patient population.

C020

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Title: A Patient-Reported Symptom-Based Predictor of Objective Sinus Inflammation

Summary: Chronic rhinosinusitis (CRS) is a heterogeneous group of disorders that involves inflammation of the nose or paranasal sinuses for at least 12 weeks. CRS is a common and widespread disease and conservative estimates report that in the United States it results in 18 to 22 million physician office visits annually. Guidelines for diagnosing CRS require symptoms and evidence of objective sinus inflammation on endoscopy or computed tomography (CT) imaging. Identifying patient-reported symptoms that correlate with objective sinus inflammation can facilitate accurate diagnosis by providers and advance epidemiological studies of CRS.

Objective: The purpose of this study is to determine patient-reported symptoms and clinical history items that optimally identify patients with objective sinus inflammation indicative of a CRS diagnosis as established by CT imaging.

Sample: Three hundred subjects between the ages of 18 and 89 completed the study. All subjects lacked a previous CRS diagnosis and a history of sinus surgery. All subjects had at least one nasal or sinus symptom classically associated with CRS for at least 12 weeks.

Methods: Consecutive symptomatic patients were prospectively screened for eligibility. Enrolled subjects completed a self-administered questionnaire prior to a standard-of-care medical evaluation. The questionnaire included demographic and medical history items (n=12), symptom frequency and severity items drawn from the rhinitis, migraine, and rhinosinusitis literature (n=47), and general quality of life items drawn from the SF-36 and PROMIS-29 instruments (n=32). All subjects were evaluated using a sinus CT scan as the gold standard to determine objective inflammation and CRS status.

Results: Of 531 patients screened for eligibility, 300 enrolled in the study with 214 receiving clinically-indicated CT scans and 86 receiving study-related CT scans. A total of 274 (91.3%) subjects met guideline-based symptom criteria for CRS but only 112 (37.3%) had objective sinus inflammation on CT imaging (Sensitivity and specificity of symptoms: 96% and 12%, respectively.) Diagnostically relevant symptoms were established by bivariate analysis and modeled using logistic regression. The frequency of “discolored discharge,” the severity of “smell loss” and “difficulty breathing through my nose,” the presence of asthma, and a lack of “recurrent headache” history significantly modeled objective inflammation ($p<0.05$). Notably, a medical history of allergic rhinitis, symptoms of facial pain and/or pressure and post-nasal drip, and symptoms associated with migraines did not model objective inflammation. The predicted probabilities generated by the multivariable logistic regression of significant symptoms and clinical history items produced a receiver operating characteristic (ROC) curve that modeled CRS status c=0.78 (95% CI: 0.73-0.84).

Conclusions: Three symptoms and two medical history items significantly predict objective sinus inflammation. Depending on the sensitivity and specificity needs of clinical decision making, this model provides a range of thresholds for establishing the appropriate diagnosis.

C021

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Title: Seasonal Variation and Predictors of Epistaxis

Summary: Epistaxis is a common ailment, affecting up to 60% of the population at least once throughout their lifetimes. Severity of epistaxis ranges from a minor annoyance to hemodynamically significant events, including death in rare cases. Many episodes of epistaxis are preventable, and when preventative measures fail, the majority of non-life threatening cases are easily managed with compression and/or topical oxymetazoline or phenylephrine. Given the high incidence, it is unsurprising that epistaxis is a common reason for healthcare utilization—accounting for about 1 in 200 emergency department visits in the US. Information on factors that predispose to a higher number of epistaxis visits would be beneficial to providers seeking to reduce costs associated with additional encounters, and would help identify at-risk patient groups for targeting of preventative measures. In this study we utilized multivariate logistic regression to characterize the variations in epistaxis incidence by season and age at a tertiary medical center in a northern climate, and analyzed our patient population for predictors of episodes.

Objective. To examine the incidence of epistaxis as a function of season and age, and to determine predictors of episodes within the epistaxis patient population presenting to a tertiary hospital system.

Sample: 2405 patients coded for a total of 3666 epistaxis episodes between 01/01/2008 and 12/31/2012 in the ED, outpatient clinic, and inpatient settings.

Methods. EMR charts of patients presenting to the Northwestern ED, admitted to an inpatient ward, or seen in an outpatient setting between 2008 and 2012 were reviewed and selected for an ICD-9 epistaxis code of 784.7. Month of presentation, demographic factors (age, race, gender, insurance status), medication use (including anti-coagulants and topical nasal steroid administration), and several comorbidities thought to be associated with epistaxis (acute sinusitis, allergic rhinitis, chronic sinusitis, coagulopathy, hereditary hematologic telangiectasia, hematologic malignancy, hypertension, thrombocytopenia, alcohol abuse, and cocaine abuse) were analyzed as potential predictors of episodes.

Results. Multivariate analysis identified allergic rhinitis, chronic sinusitis, coagulopathy, hereditary hemorrhagic telangiectasia, hematologic malignancy, and hypertension as predictors of a higher number of cases. Epistaxis occurred more frequently during colder months and in older patients.

Conclusions. Epistaxis occurs more commonly during the winter and in older patients. Allergic rhinitis, chronic sinusitis, coagulopathy, hereditary hemorrhagic telangiectasia, hematologic malignancy, and hypertension are associated with increased epistaxis incidence.

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C022

Title:
Contemporary Results Of Carotid Endarterectomy: Is It A Beneficial Procedure For Women?

Summary:
Previous randomized trials have suggested that carotid endarterectomy (CEA) may not be efficacious for women primarily due to higher postoperative event rates.

Objective:
Our objective was to compare contemporary CEA outcomes among women and men in a "real world" setting.

Sample:
CEA procedure related data were obtained from the American College of Surgeons National Surgical Quality Improvement Program database (ACS NSQIP), 2011-2012.

Methods:
Symptomatic patients were those with ipsilateral stroke, transient ischemic attack, or amaurosis fugax. Patient characteristics and 30-day postoperative outcomes were examined for sex and symptomatology. Multivariable logistic regression models were used to adjust for patient characteristics and hospital variations.

Results:
Of the 5,423 patients with specific data on CEA, 2,242 (41.3%) were symptomatic and 3,181 (58.7%) were asymptomatic. There were a higher proportion of women in the asymptomatic than symptomatic group (40.3% vs. 37.3%; P=0.025). For the entire cohort, women were more often obese (34.1% vs. 30.9%; P<0.001) and a smoker (29.5% vs. 24.1%; P<0.001), but less often taking statins (75.9% vs. 80.5%; P<0.001) than men. Patch use was equivalent between women and men (76.1% vs. 76.8%; P=0.4997). After adjusting for patient characteristics, there were no statistically significant differences between women and men for postoperative death, stroke, or myocardial infarction for both symptomatic and asymptomatic groups (Table).

	TOTAL	SYMPTOMATIC				ASYMPTOMATIC			
30-DAY POSTOPERATIVE OUTCOME	n=5423	**Women** n=836 37.3%	**Men** n=1406 62.7%	**For Women** Odds ratio	***P-value***	**Women** n=1282 40.3%	**Men** n=1899 59.7%	**For Women** Odds ratio	***P-value***
Composite primary end point	4.9%	5.3%	6.1%	0.821	*0.331*	3.9%	4.6%	0.873	*0.464*
Death	0.7%	1.2%	0.9%	0.960	*0.931*	0.6%	0.4%	1.617	*0.390*
Stroke	2.3%	4.5%	3.8%	0.934	*0.783*	1.3%	1.4%	0.924	*0.804*
Myocardial infarction	2.5%	1.8%	2.1%	0.810	*0.515*	2.1%	3.3%	0.682	*0.110*

Conclusions:
Based on this reliable third-party collected and validated data, postoperative outcomes were shown to be similar among women and men regardless of symptom status. However, there remains ample room for improvements in optimal medical therapy for both women and men.

C023

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Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Absence Epilepsy: the Significance of Intermittent Rhythmic Delta Activity

Objective:
Intermittent rhythmic delta activity (IRDA) has been recognized by many electroencephalographers in children with childhood absence epilepsy (CAE). Some suggest that it carries a favorable prognosis. We assessed the predictive presence of IRDA in a large cohort of children whose clinical and EEG features meet diagnostic criteria for CAE as it is currently defined by the International League Against Epilepsy.

Methods:
Patients were identified by a keyword search ("IRDA," "CAE," "absence," and "staring spells") in the database of all EEG recordings performed at our center from 2003-2011. The diagnosis of CAE was confirmed by a review of all clinical information. We also extracted data regarding age at seizure onset, medications used, presence of convulsive seizures, individual education plan (IEP), years of follow-up, length of seizure remission at last visit, EEG (normal-abnormal) at last visit. Multiple EEGs were often available for an individual child. The initial EEG performed at our center was used to assess the presence of IRDA. Only children followed for at least 6 months were included in the analysis. A good seizure outcome was defined as seizure remission for at least 6 months at last follow-up. The chi-square and t-tests were used for assessing the relationship of IRDA with other clinical factors and outcomes.

Results:
Of 13,428 EEGs searched, 135 children met criteria for CAE (average age at onset = 6.5, average age at EEG = 8.2, 64 (47%) girls). IRDA was present in 24 (18%) initial EEG tracings. Age at onset was a bit younger in the IRDA (5.8 vs 6.7y, p=0.09) group. Length of follow-up was about the same. 11/24 (46%) of children with IRDA and 62/103 (60%) without IRDA were seizure-free at last contact (p=0.20). Children in the IRDA group were somewhat less likely to develop convulsive seizures (8% vs, 21%, p=0.16) and significantly less likely to have an IEP (4% vs, 21%, p=0.03).

Conclusions:
Seizure remission does not appear to be improved in children whose EEGs demonstrate IRDA; however, longer-term outcomes were not studied here. There are fewer children with convulsions (a finding consistent with others) and also fewer in need of special education resources at school. Our findings in general support the concept that IRDA may identify a subset of children with CAE who have better outcomes in general.

(In order to be considered for inclusion in the 2014 Research Day program, **ALL** abstracts must be in Arial, 11 pt font, and must fit one page. Any abstract exceeding criteria will be sent back for revision. Thank you.)

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Title: Venous Thrombolembolic Events (VTE) in Reconstructive Pelvic Surgery

Summary: It is well know that surgery and postoperative immobilization are risk factors for the development of VTE. The risk of postoperative VTE in patients undergoing major general and gynecologic surgery ranges from 15-40% in the absence of thromboprophylaxis. These potentially preventable adverse events can have catastrophic consequences in the postoperative period.

Objectives: To determine the incidence and risk factors for VTE in women undergoing reconstructive pelvic surgery for incontinence (UI) and/or pelvic organ prolapse (POP).

Sample: Using the American College of Surgeon's National Surgical Quality Improvement Program (ASC-NSQIP) registry, we identified patients who underwent surgery for UI and/or POP from 2006-2010. Identification was based on *Current Procedural Terminology* (CPT) codes specific to urogynecologic surgery.

Methods: We defined two cohorts: women with any reconstructive pelvic surgery performed, with concomitant surgery from other specialties allowed (RPS+other), and women whose only procedure was reconstructive pelvic surgery (RPS). VTE cases were defined as deep vein thrombosis (DVT) or pulmonary embolism (PE) diagnosed by venous duplex scan, venogram, or CT scan requiring anticoagulation within 30 days of surgery. Demographic characteristics (age, body mass index (BMI), race), co-morbidities (diabetes, hypertension, chronic obstructive pulmonary disease, congestive heart failure, smoking status, functional status) and operative characteristics (operative time, length of stay (LOS), in-patient status, and ASA class (American Society of Anesthesiology Physical Status classification) were extracted from the database. We assumed that surgeons adhered to the American College of Chest Physicians risk classification for VTE in surgical patients prevention strategy guidelines. Peri-operative variables were analyzed using chi-squared tests and student's t-tests for categorical and continuous variables. We performed a multiple logistic regression to control for confounding variables.

Results: 20,687 women underwent RPS + other, with 69 cases of VTE for a rate of 0.3%. Multivariate analysis demonstrated predictors for postoperative VTE including inpatient hospital status (OR 7.69, $p<0.001$), higher American Society of Anesthesiologists Physical Classification System (ASA) (OR 2.70, $p<0.001$), and emergency intervention (OR 3.65, $p=0.008$). When women undergoing RPS were analyzed, there were 14 cases of VTE, with an incidence of 0.1% and the only specific predictor for postoperative VTE was length of stay ($p<0.037$).

Conclusion: The incidence of VTE following reconstructive pelvic surgery is very low, but it is increased in women undergoing concomitant surgeries. Patients undergoing inpatient surgery with higher ASA classifications and requiring emergency intervention were at highest risk for VTE.

C026

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Title: Postpartum females demonstrate differential neural activation compared with non-postpartum females during an affective reactivity task

Objective: The postpartum period has been associated with depressive and anxious symptoms, ranging from low energy, fatigue, inability to concentrate and make decisions, and suicidal experience (Silverman et al., 2007; Lindahl, Pearson, & Colpe, 2005; Grace, Evindar, Stewart, 2003). Research has demonstrated neural differences in postpartum women with and without depression (Moses-Kolko et al., 2010; Silverman et al., 2011), though limited studies have been published in this area. This study had two aims: (1) to investigate differences in neural activation of postpartum women to non-postpartum women during an affective reactivity task and (2) to examine the extent to which depressive and anxious symptoms were associated with neural activation while viewing positive, neutral, and negative stimuli.
Method: Ten participants were recruited from the community to participate in a clinical study at Northwestern University, Asher Center. Five postpartum women (3 healthy and 2 participants with major depressive disorder) and five non-postpartum women matched for age and clinical status observed emotional pictures with varied valence and intensity during a functional Magnetic Resonance Imaging (fMRI) scan. Participants completed the Inventory of Depressive Symptomatology-Clinician and Self-Rated versions (IDS-C and IDS-SR) to determine depression severity and the State-Trait Anxiety Inventory (STAI) to determine level of anxiety. Imaging data was preprocessed using Matlab_R2012a and SPM8. Two sample t-tests were performed in SPM8 to assess group differences. Correlational analyses assessed the extent to which depressive and anxious symptoms are associated with neural activation.
Results: Whole-brain analyses with small volume corrections indicated group differences between postpartum and non-postpartum women (*p*s < .05). Specifically, postpartum women demonstrated greater activation than non-postpartum females while viewing positive images in the right superior temporal gyrus. Alternatively, non-postpartum women demonstrated greater activation in the left inferior parietal lobe while viewing positive stimuli. While viewing neutral stimuli, non-postpartum women displayed greater activation than postpartum women in the following regions: right mid cingulate, right supplementary motor area, right anterior cingulate, right cerebellum, left insula, left precentral, cingulate gyrus, and left supramarginal gyrus. While viewing negative stimuli, non-postpartum women demonstrated greater activation than postpartum women in the following regions: left supramarginal gyrus, left precentral, and left supplementary motor area. There were no significant correlations between blood-oxygen-level-dependent (BOLD) signal and depression severity or state-trait anxiety (*p*s > .05). Groups did not differ on age or ethnicity (*p*s > .05).
Conclusion: Our findings support the literature that postpartum women differ from non-postpartum women in affective reactivity to positive, neutral, and negative stimuli. These results demonstrate how a vulnerable period in the female lifespan is associated with differences in emotional processing. This may suggest susceptibility for mood dysregulation; however, our small sample size may have decreased our ability to assess how psychopathology is associated with neural activation.

C027

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Title: User-Centered Development of *LiveWell*: A Smart Phone Application for Bipolar Disorder

Summary: The goal of this project is to develop a smart phone application, *LiveWell*, for individauls with bipolar disorder. This tool aims to educate patients, help reduce symptoms, and prevent disease relapse by enhancing self-management and communication with psychiatrists. Using the phone, participants check-in daily and record their sleep time, medication use, wellness score and the presence of any early warning signs. In addition, sensors on the phone and a wrist-worn actimeter obtain additional behavioral data including daily patterns of sleep, activity and social routines. According to their self-report and sensor data, participants receive feedback that directs their attention to areas of concern and guide them towards solutions. Patients are eligible for the study only if their psychiatrist also agrees to participate. Providers have access via a web portal to a report summarizing their patient's data. Psychiatrists are sent an urgent alert if there are worrisome problem areas in the patient's behavioral or self-report data.

Objective: Our user-centered design process aimed to refine the *LiveWell* application so that it appeals to both patients and providers. During pivotal points of the tool's development, we asked for feedback from the participants with bipolar disorder and their clinicians. We utilized these comments and suggestions to help create a useful and persuasive self-management program.

Sample: Patients who participated in design assessments were carefully pre-screened for bipolar 1 disorder using a structured phone interview, followed by a study clinician diagnostic interview and chart review. Study clinicians were board certified psychiatrists experienced in treating people with bipolar 1 disorder.

Methods: The study utilized an iterative user-centered design to enhance acceptance, participation, and long-term use by both patients and providers. Individual structured interviews were carried out using mock ups of the application design to obtain feedback on the usability and utility of the prototype. A qualitative text-based analysis of transcripts was used to identify important user issues and to redesign the application.

Results: Participant users experienced substantial difficulties rating mood and thought speed separately in the daily check-in, often including behavioral symptoms in these ratings. As a result, the mood and thought scales were replaced by a single wellness scale. Patients anchored and personalized their wellness scale by identifying the salient symptoms that occur at each rating level. The original 7-point rating scale was replaced with a 9-point scale. Participants and providers indicated that the 7-point scale lacked sufficient range to capture normal mood shifts as well as extreme, crisis symptoms. Initial feedback on the modifications was positive, with users stating the application was easier to use and better captured their wellbeing. Ongoing work is addressing when providers would like the application to recommend participants contact them and when the application should also send an urgent alert email to the providers.

Conclusion: The user-centered development of the *LiveWell* application improved the usability of the system for patients and providers. By incorporating both clinician and participant feedback in the design process, we anticipate that the application will be used more frequently and over longer periods of time. This should lead to enhanced self-management of bipolar disorder as well as earlier and more responsive provider intervention. In this way, *LiveWell* will achieve its ultimate goal of reducing the occurrence and severity of mood symptoms in bipolar 1 disorder.

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Title: Melanoma Associated with TNFα Inhibitors: a Research on Adverse Drug events And Reports (RADAR) Project

Summary

Tumor necrosis factor-α inhibitors (TNFαIs) have been linked with malignancies, including melanoma. We have detected a statistical association.

Objectives: Determine if there is an association between TNFα inhibitors and melanoma and explore any detected associations; increase awareness for early detection of melanoma during TNFα inhibitor therapy.

Methods

We searched the FDA Adverse Event Reporting System (FAERS) database for terms related to melanoma (M) combined with TNFαIs for detection of safety signals. We also searched a large urban academic electronic medical record (EMR) for detection of relative risk (RR) of melanoma in subjects exposed to TNFαIs.

Results

1041 reports of M-associated with TNFαIs were identified in FAERS. A safety signal was detected for infliximab (I); golimumab (G); etanercept (E); adalimumab (A). Certolizumab pegol (CP) had reports of cases, but no safety signal. In the EMR, 35 cases of M were detected for 6,045 exposed to TNFαIs, resulting in a significant RR for A and E. For TNFαIs as a class, a significant signal between M and TNFαIs was detected (FAERS – EBGM = 3.30, 95% CI: 3.10-3.52), and RR was significant (EMR – RR = 1.75 95% CI: 1.25-2.43 $p<0.0009$).

Conclusions

We identified a significant association for exposure to TNFαIs and M for all drugs except CP (FAERS) and for A and E (EMR). Of note, CP labeling does not include M as a possible risk. Our findings add to existing evidence linking TNFaIs with malignant melanoma.

C029

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Title: Survey of school nurses about Academic Accommodations Provided to Students with Concussions

Objective: Recent evidence indicates that cognitive over exertion in the classroom delays recovery from concussions in a similar manner to physical exertion. Although many schools have return-to-sports protocols for concussed students, it is unknown how many have return-to-classroom protocols for such students. This study aimed to determine how many schools have return-to-classroom protocols, types of academic accommodations provided by these protocols, and whether school type or experience with concussions is related to likelihood of having such protocols.

Methods: A 22-question survey was distributed via email to 2700 elementary and high school nurses in Illinois. Survey questions included: school size, location, number of concussed students in previous year, policies for returning concussed students to athletics/academics, familiarity with CDC-recommended academic accommodations after concussion, and accommodations the school provides for concussed students.

Results: Response rate was 20.74%. Schools were more likely to have return-to-sports than return-to-classroom protocols (56.65% vs. 29.86%, $p<0.05$). High schools were more likely to have return-to-sports and return-to-classroom protocols than elementary schools (80.65% vs. 41.71%, $p<0.05$; and 40.65% vs. 28.34%, $p<0.05$, respectively).

Schools with return-to-classroom protocols were more likely to offer each of the 14 accommodations in our survey ($p<0.05$). For example, 69% of these schools offered rest breaks compared to 49.20% of schools without protocols. Nurses at these schools were also more likely to be familiar with CDC-recommended academic accommodations for concussed students (46.39% vs. 22.85%, $p<0.05$).

Ninety-five percent of high schools had concussed students in the past year compared to 73.26% of elementary schools. Among high schools, 27.1% had >20 concussions. These schools were more likely to offer each of the 14 accommodations ($p<0.05$) and more likely to have return-to-classroom protocols (61.90% vs. 32.74%, $p<0.05$) than high schools with <20 concussions the previous year.

Conclusions: Most Illinois schools lack protocols for returning concussed students to the classroom. High schools and schools with more concussions were more likely to have return-to-classroom protocols and to provide CDC-recommended accommodations. Schools may benefit from guidance in establishing return-to-classroom protocols for concussed students.

C030

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Title: Emergency Contraception Knowledge, Prescription Patterns, and Barriers to Provision among Emergency Medicine Resident Physicians

Background: Women at risk of unintended pregnancy, including victims of sexual assault, routinely access care in the emergency department. Emergency contraception reduces the risk of unintended pregnancy. Emergency physicians must be knowledgeable about emergency contraception to properly care for their patients.

Objectives: The purpose of this study is to assess knowledge levels of emergency contraception among emergency medicine resident physicians. Secondary objectives include describing prescribing patterns and assessing potential barriers to emergency contraception provision.

Methods: A cross-sectional, Internet-based survey was distributed to current United States emergency medicine resident physicians. The 26-item questionnaire included 4 parts: demographic information, emergency contraception knowledge, practice patterns, and barriers to emergency contraception provision.

Results: A total of 380 participants accessed the survey, with 321 surveys included into the analysis. Most participants worked in an academic medical center (74.8%), in a metropolitan or large city (89.9%), and non-religiously affiliated hospital (88.6%). All training years and U.S. regions were represented. Mean knowledge score was 62.2%. Most identified levonorgestrel pill as a form of emergency contraception (97.8%), but fewer selected oral contraceptive pills (48.6%), copper intrauterine device (15.6%), and ulipristal acetate (15.0%). Twenty five percent of participants reported prescribing emergency contraception in the last 6 months. Almost half of the participants were unaware whether their hospital had emergency contraception on formulary. Sixty five percent of respondents endorsed one or more barriers to emergency contraception provision, with lack of sufficient knowledge (37.5%) and concern for lack of follow up (39.1%) cited as the most common barriers respondents faced.

Conclusions: Emergency medicine resident physicians provide care for women at risk of unintended pregnancy, but lack complete knowledge of emergency contraception. Emergency department changes and improved education may increase emergency contraception provision to women at risk of unintended pregnancy who present to the emergency department.

C031

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Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Evaluation of Deep Venous Thrombosis in Cryptogenic Stroke and Patent Foramen Ovale

Summary and Objective:

In cryptogenic stroke (CS), paradoxical embolus has been suggested as a stroke mechanism. Prior studies have found a significant rate of pelvic deep venous thrombosis (DVT) using magnetic resonance venography (MRV) and other imaging modailities in ischemic stroke (IS) patients. We sought to evaluate the yield of diagnostic tests for lower extremity (LE) and pelvic DVT in IS patients with patent foramen ovale (PFO) and in the subset with CS.

Sample and Methods:
A single center retrospective study was performed to identify consecutive ischemic stroke or TIA patients with PFO who underwent 3D pelvic MRV imaging (Lantheus Medical Imaging, N. Billerica, MA) between 2009 and 2013 as part of an inpatient diagnostic evaluation. Results of pelvic MRV, LE Doppler ultrasound (US) as well as clinical data were abstracted. Ischemic subtype was retrospectively assigned using the previously validated Causative Classification System (CCS) for IS. Patients determined to have possible cardio-aortic embolism or undetermined stroke mechanisms by CCS were classified as CS. We estimated point estimates and 95% confidence intervals (CI) for DVT prevalence and compared among stroke subtypes using Chi-squared tests.

Results:

Of 131 patients who met inclusion criteria, mean age was 57 +/- 17 years and median time from admission to MRV was 2 (IQR 1-3) days. DVT prevalence was overall 7.6% (95% CI, 4.1 to 13.6); pelvic DVT 1.5% (95% CI, .1 to 5.8); and LE DVT 7.1 % (95% CI, 3.6 to 13.2). One patient with a pelvic DVT also had a LE DVT. Comparing patients with CS (n=98) to non-CS subtypes (n=33), there was no significant difference in the prevalence of pelvic DVT (2.1% vs. 0%, P=1), LE DVT (6.2% vs. 10.3%, P=0.43) or any DVT (7.2% vs. 9.1%, P=0.71).

Conclusion:

Among patients with IS or TIA and PFO, the majority of detected DVTs were in the LE veins rather than pelvic veins and did not differ by stroke subtype. Given the lower utility than previously reported, the routine inclusion of pelvic MRV as part of an inpatient IS/TIA diagnostic evaluation in patients with CS and PFO is questionable.

C032

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Title: Time to Surgery for Definitive Fixation of Hip Fractures: A Look at Outcomes Based Upon Delay

Objective: Morbidity and mortality after hip fracture in the elderly is often influenced by non-modifiable comorbidities. Time-to-surgery is a modifiable factor that may play a role in post-operative morbidity. This study investigates outcomes and complications in elderly hip fracture surgery as a function of time-to-surgery.

Methods: Using American College of Surgeons – National Surgical Quality Improvement Program (ACS-NSQIP) 2011 data, a study population that includes demographics, comorbidities and surgical outcomes was generated using CPT codes for hemiarthroplasty (27125), percutaneous or open fixation of femoral neck fractures (27235, 27236), and fixation with a screw and side plate or intramedullary fixation (27244, 27245) for peritrochanteric fractures. Triads (<24hours to surgical intervention, 24 to 48hours, and >48hours) were created that were matched for surgery type, sex, age and ASA class. Complications and outcomes were compared using generalized linear models which accounted for triad, as well as adjusting for other covariates. Surgery-to-discharge time was modeled using unadjusted and adjusted clustered proportional hazards regression.

Results: Study population: 2904 hip fractures; and 968 matched triads waiting <24hours to surgical intervention, 24 to 48hours, and >48hours were identified. Unadjusted models showed the >48hour group had greater overall complication rate (18.8%) ($p=0.011$), length of stay (10.7days) ($p<0.001$), and had greater surgery-to-discharge time (hazard ratio, 95%Confidence Interval: 0.73, 0.67-0.79) ($p<0.001$). Early surgical intervention did not increase readmission rates ($p=0.593$) or mortality ($p=0.316$). Adjusted analyses showed persistent trend toward increasing complications with increasing time-to-surgery (although no longer statistically significant, $p=0.595$), as well as increased total length of stay ($p<0.001$), and increased surgery-to-discharge time ($p<0.001$).

Conclusion: Early surgical intervention in a comorbidity-adjusted population of elderly hip fracture patients does not increase overall complications, readmissions or 30-day mortality. Time-to-surgery >48 hours is associated with costly increased total length of stay and, specifically, an increased surgery-to-discharge time.

C033

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Title: Factors Affecting Readmission Rates After Primary Total Hip Arthroplasty

Background: Readmissions following total hip arthroplasty (THA) are a focus given **the** forthcoming financial penalties hospitals may incur starting in 2015. The purpose of this study was to identify preoperative comorbidities and postoperative conditions that increase the risk of readmission following THA.

Methods: Using the American College of Surgeons – National Surgical Quality Improvement Program (ACS-NSQIP) data for the year 2011, a study population was identified using the CPT code for primary THA (27130). The sample was stratified into readmitted and non-readmitted cohorts. Demographic variables, preoperative comorbidities, lab values, operative characteristics and surgical outcomes were compared between the groups using univariate and multivariate logistic regression models.

Results: Of the 9,441 patients, there were 345 readmissions (3.65%) within the first thirty days following surgery. Comorbidities that increased the risk for readmission were diabetes (<0.001), chronic obstructive pulmonary disease (COPD) (p<0.001), bleeding disorders (p<0.001), preoperative blood transfusion (p=0.035), steroid use (p<0.001), dyspnea (p=0.001), previous cardiac surgery (p=0.002) and hypertension (p<0.001). A multivariate regression model was used to control for potential confounders. Having a BMI>40 (Odds Ratio [OR] = 1.941, Confidence Interval [CI] = 1.019 - 3.696; p=0.044) and using steroids preoperatively (OR 2.928, CI 1.731 – 4.953; p<0.001) were independently associated with a higher likelihood of readmission, while a high preoperative serum albumin (OR 0.688; CI 0.477 – 0.992, p=0.045) was independently associated with a lower risk for readmission. Postoperative superficial surgical site infection, pulmonary embolism, deep venous thrombosis and sepsis (p<0.001) were all independent risk factors for readmission.

Conclusions: The risk of readmission following THA increases with growing pre-operative comorbidity burden, and is specifically increased in patients with a BMI>40, a history of steroid use, low preoperative serum albumin, and in those patients suffering postoperative superficial surgical site infection, thromboembolic event and sepsis.

C034

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Title: Diastolic Function and Left Atrial Volume Improve following Septal Myectomy for Obstructive Hypertrophic Cardiomyopathy

Background
Septal myectomy is an established therapy for obstructive hypertrophic cardiomyopathy (HCM) patients with symptoms refractory to maximal medical therapy. Although reduction in left ventricular (LV) outflow tract gradient is well documented, little data exists regarding changes in left atrial (LA) volume and LV diastolic parameters following myectomy.

Methods
We investigated changes in LA size and LV diastolic function in patients with HCM following septal myectomy with or without mitral valve repair/replacement or MAZE surgery from 2004 to 2011. Patients who had serial echocardiograms at baseline and at most recent follow up, at least 6 months following myectomy, were included. Patients with aortic valve replacement were excluded, and those with mitral valve replacement (MVR) or annuloplasty were excluded from diastolic function analysis. Baseline and follow up clinical and echocardiographic parameters were compared using paired t-tests and Fisher's exact test for continuous and categorical variables respectively.

Results
We studied 25 patients (age 49.2 ± 13.1, 48% female) followed for a mean of 527 days after surgery. Three patients (12%) underwent MAZE and 13 (52%) underwent mitral valve surgery, of whom 5 had a MVR or annuloplasty. LA volume index significantly decreased (from 47.2 ± 17.6 to 35.9 ± 17 ml/m^2, p=0.001) and LV diastolic function improved with an increase in lateral e' velocity (from 7.3 ± 2.9 cm/sec to 9.8 ± 3.1 cm/sec, p=0.01) and a decrease in E/e' (from 14.8 ± 6.3 to 11.7 ± 5.5, p=0.051). As expected, septal thickness and LVOT gradient decreased, and symptoms of dyspnea and heart failure improved.

Conclusions
These data indicate that relief of LVOT obstruction in HCM by septal myectomy results in improved LV diastolic function and concomitant reduction in LA volume with improved dyspnea and NYHA functional class. Whether decreased LA volume leads to decreased atrial fibrillation in longer term follow up needs further evaluation.

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C036

Title: Comorbid Anxiety as a Differential Treatment Predictor for Telephone vs. Face-to-Face Administered Cognitive Behavioral Therapy for Depression

Summary: A recent trial comparing telephone-administered cognitive behavioral therapy (T-CBT) to face-to-face cognitive behavioral therapy (FtF-CBT) found that T-CBT produced significantly less dropout, but resulted in equivalent post-treatment outcomes in the treatment of Major Depressive Disorder (MDD). Despite equivalent outcomes, there was a small but statistically significant benefit for FtF-CBT over T-CBT at post-treatment follow-up. The cause of the differences between T-CBT and FtF-CBT at follow-up is unclear. An initial suggestion that these differences might be the result of variations in therapeutic alliance between T-CBT and FtF-CBT was not supported, as no significant differences across treatment arms were found in the client or therapist reports of therapeutic alliance. A growing body of literature suggests that comorbid anxiety may negatively impact outcomes in the treatment of depression.

Objective: The primary aim of the current study was to evaluate the differential impact of comorbid anxiety diagnoses on depression outcomes among patients receiving telephone cognitive behavioral therapy (T-CBT) or face-to-face cognitive behavioral therapy (FtF-CBT) for the treatment of depression.

Sample: 325 participants diagnosed with Major Depressive Disorder were randomized to receive 18 sessions of T-CBT or FtF-CBT.

Methods: Participants were randomized to either T-CBT or FtF-CBT by an independent statistician. The treatment delivery medium was the only experimental factor to vary between the two groups, as T-CBT and FtF-CBT used the same CBT protocol. CBT is a well-accepted psychotherapy for the treatment of depression with a large and consistent evidence base. Comorbid anxiety was measured using the Mini International Neuropsychiatric Interview and Generalized Anxiety Disorder-7. Depression was measured using the Hamilton Rating Scale for Depression and Patient Health Questionnaire-9.

Results: A hierarchical model including the two-way interaction of treatment assignment and anxiety status indicated a significant effect for all outcome variables (*ps* < .05). Post hoc *t*-tests indicated T-CBT participants with comorbid anxiety disorders had significantly higher symptom severity over time compared to their T-CBT counterparts without anxiety (*ps* < .001) and FtF-CBT counterparts with comorbid anxiety (*ps* < .003). There were no significant differences in outcomes between those with and without comorbid anxiety disorders receiving FtF-CBT, or between T-CBT and FtF-CBT among those without comorbid anxiety disorders.

Conclusions: The findings indicate that the presence of a comorbid anxiety diagnosis at baseline reduces the efficacy of CBT delivered via telephone, relative to face-to-face, in the treatment of depression. While delivering treatment by telephone offers a number of advantages, such as improved adherence and treatment access, it may also come with costs to some patients. As the use of the telephone to provide psychotherapy becomes more widespread, it will be important to understand for whom telephone treatment is optimal, for whom it may come with some risks, what those risks are, and how telephone treatments can be modified to minimize those risks.

C037

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Title: Non-eosinophilic Nasal polyps in second-generation Asian patients in the U.S. with Chronic Rhinosinusitis; evidence for genetic influence on eosinophilia

Summary: We showed that nasal polyps in second-generation Asian patients with chronic rhinosinusitis have higher level of eosinophilic cationic protein and also higher number of eosinophils compared to patients of other ethnicities .This in line with the reported higher prevalence of non-eosinophilic polyps in native-born Asian is indicative of evidence for genetic influence on eosinophilia in chronic rhinosinusitis.

Objective: Nasal polyps in CRS from Asian patients residing in their country of origin are known to be less eosinophilic compared to polyps from patients of European descent in Belgium or the US. In an attempt to test if this is due to environmental or genetic factors, we evaluated the level of the eosinophilic marker ECP and evidence for eosinophilia in the pathology report of polyp and sinus tissue in a group of second-generation Asian CRS patients in Illinois compared with Illinois patients of other ethnicities.

Sample/Method: A consecutive series of 168 chronic rhinosinusitis with polyp (CRSwNP) patients who underwent surgery in the Otolaryngology Department of Northwestern University were included in the study. Patients with Asian ancestry (Chinese, Korean, Japanese....) who were born in the US were identified as second generation Asian. Tissue homogenates from polyp and uncinate tissue (UT) were analyzed for ECP. All the original pathology reports of polyp and sinus tissue obtained during surgery were reviewed for reported eosinophilia in the tissue.

Results: The mean ECP levels in polyps and UT of European descended patients were 6 fold and 5 fold higher respectively than in Asian patients. There was a significant difference in ECP level in polyp tissue between Asian versus non-Asian patients (mean 199 vs 1146;$P<0.05$). Per pathology reports, 18% of polyps from Asian patients were eosinophilic as opposed to 70% in patients of European descent, 66% in Hispanics and 59% in African American patients ($P<0.0001$ for all comparisons).
The mean ECP level of polyp tissue in patients with reported eosinophilia in the pathology report was significantly higher than ECP in samples from patients without reported eosinophils (mean 895 vs. 188;$P<0.005$).

Conclusion: The evidence for predominance of non-eosinophilic inflammation in polyps in second-generation Asian patients compared to other ethnicities is in line with the reported higher prevalence of non-eosinophilic polyps in native-born Asians and may be indicative of a genetic predisposition in formation of non-eosinophilic polyps in this group of patients.

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C038

Title: Telogen effluvium and associated incidence of abnormal serum ferritin, zinc, 25-hydroxy vitamin D, and thyroid stimulating hormone

Background: Telogen effluvium (TE) is a diffuse, non-scarring alopecia following an abrupt and predominant shift of hair follicles from anagen to telogen phase. Proposed co-factors include, but are not limited to, endocrine and nutritional abnormalities, drug reactions, as well as physical and psychological stress. In addition, possible triggers that can be objectively measured include abnormalities of iron, vitamin D, zinc, and thyroid hormone.

Objectives: The primary objective was to determine the reported incidence of abnormal serum ferritin, zinc, 25-hydroxy vitamin D, thyroid stimulating hormone (TSH), and free thyroxine (fT4) in a population of patients with TE, as well as to identify possible trigger factors in this TE population.

Methods: A diagnostic code search was performed to identify patients clinically diagnosed by a dermatologist as TE over a 24-month period in a large, urban, single site, academic-based dermatology practice in Chicago. Data collected from medical records included age, race, gender (all females), suspected hair loss trigger factor(s), as well as serum ferritin, zinc, 25-hydroxy vitamin D, TSH, and fT4. Trigger factors were categorized as endocrine, nutritional, drug-related, physical, or psychological stressors.

Results: 99 females with TE were included in our analysis. The incidence of abnormal results was as follows: low serum ferritin 9/93 (9.7%), low serum zinc 4/61 (6.6%), low serum 25-hydroxy vitamin D 34/79 (43%), low TSH 2/58 (3.4%), and high TSH 4/58 (6.9%). The proportions of patient and/or physician suspected trigger factors were: endocrine 21/99 (21.2%), nutritional 15/99 (15.2%), drug-related 7/99 (7.0%), physical stressor 7/99 (7.0%), and psychological stressor 31/99 (31.3%). Multiple trigger factors were suspected in 15/99 (15.2%) patients. In 32/99 (32.3%) patients, no trigger factor was detectable. There was no statistically significant correlation between category of trigger factor and age, race, or serology.

Conclusion: In our patient population, vitamin D deficiency was the most frequent laboratory abnormality identified (43% of 79 tested patients). Psychological stressors were the most common patient and/or physician-suspected trigger factor, yet in 32% of patients, no trigger factor was identifiable. Recently low vitamin D in a controlled study has been associated with TE. Further investigation is needed to understand the mental and physical stressors that precipitate TE.

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C039

Title: Clinical Factors Associated with Bleeding in Ph-Negative MPN

Summary: Patients with Philadelphia Chromosome (Ph)-negative myeloproliferative neoplasms (MPN) that include polycythemia vera (PV), essential thrombocythemia (ET) and myelofibrosis (MF), share an increased risk of thrombotic and hemorrhagic complications. Risk factors for hemorrhagic complications are less defined compared to those for thrombosis

Objective: To determine whether acquired von Willebrand Disease (aVWD), thrombocytosis or treatment history associates with bleeding in Ph-negative MPN patients.

Sample and Methods: The Northwestern Electronic Data Warehouse identified MPN patients ≥18 years, seen between 2005-2013, with available testing for aVWD and/or thrombocytosis, defined by a platelet count of > 700 x 10^9/L. aVWD was defined by vW antigen and/or ristocetin cofactor activity below the laboratory reference range for blood type (usually <40% for blood group O or <53% for non blood group O). We defined aVWD type by the ratio of vW antigen to activity. Associations were tested using Fisher exact test; $p<0.05$ was considered statistically significant.

Results:

Baseline Characteristics: 117 MPN patients were identified: 20 with PV (17%), 79 with ET (67.5%), 8 with MF (6.8%), and 10 with MPN NOS (8.5%). Median age at diagnosis was 52 years (Range 17-86) and 65% were women. *JAK2 V617F* was positive in 55 patients (47%). To date, 13 patients died, with one from a thrombotic event (CVA), and one from leukemic transformation.

Bleeding and thrombotic complications: Bleeding complications were reported in 19 cases (16%) and thrombotic events were reported in 29 patients (25%): DVT/PE (N=10), TIA (N=6), CVA (N=7), MI (N=6), Abdominal Venous Thrombosis (N=4), lower extremity artery occlusion (N=2), and IVC thrombosis (N=1). 62% of cases had neither bleeding nor thrombosis, and 3 of 19 bleeding cases (unrelated to therapeutic anticoagulation) had prior history of thrombosis. Bleeding episodes involved mucocutaneous sites with 4 cases with epistaxis and 3 with menorrhagia and 9 cases of GI bleeding (3 upper GI, 5 lower GI, 1 unknown). There was 1 case each of a subdural hematoma, ecchymoses, and bleeding after a bone marrow biopsy. Bleeding events were more common in MPN NOS (40% of MPN cases) compared to PV (25% of PV cases) and ET (13% of ET cases). Aspirin or other anticoagulation was discontinued in 13 of 19 bleeding cases (68%), and cytoreductive therapy was added or adjusted in 6 of 19 bleeding cases (32%). The mean platelet count at the time of bleeding was 687 x 10^9/L (range 87-2000), and the mean white blood count (WBC) 14.0 x 10^9/L (range 5.1-27.4). 36 patients (31%) had testing for aVWD; the median ristocetin activity was 81% (range 12-190%), vW Antigen 112% and factor VIII activity 93%. Multimer analysis was done in only 2 cases. In 1 case, an absence of large multimers was reported, suggestive of type II avWD, and was normal in the other. Of 36 patients, there were 6 (17%) cases of aVWD (ristocetin activity 12%, 22%, 37%, 38%, 38% and 53% respectively); 5 with vWD type 2 and 1 with vWD type 1. Only 2 of 6 patients with aVWD had bleeding, both while on ASA (bleeding after bone marrow biopsy and menorrhagia). Using Fisher exact test, bleeding was associated with ASA therapy only ($p<0.0001$). Cytoreductive therapies, age, MPN subtype, JAK2 status, aVWD and CBC did not correlate with bleeding.

Conclusions: We identified a similar prevalence of bleeding and thrombotic events. In our study, bleeding was associated with aspirin intake and typically resulted in its discontinuation. An evidence-base supports ASA use in PV, but is lacking in other MPN. Therefore, treatment with ASA should be initiated on an individual rather than empirical basis given a potential for bleeding in some MPN patients. The mean platelet count at the time of bleeding was extremely increased, but aVWD was rarely identified.

C040

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Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Unacceptably high error rates in cefepime susceptibility for ESBL-producing *E. coli* when tested with Vitek 2.

Background: While a lack of concordance is known between gold standard MIC determinations and Vitek 2, the magnitude of the discrepancy and impact on treatment decisions for extended spectrum beta-lactamase (ESBL) producing *Escherichia coli* are not.

Methods: Clinical isolates of ESBL-producing *E. coli* were collected from blood, tissue, and body fluids from January 2003, to July 2009. Resistance genotypes were identified by PCR. Primary analyses evaluated discordance between Vitek 2 and gold standard methods using cefepime susceptibility breakpoint cutoff values of 8, 4, and 2 mg/L. Discrepancies in MICs between methods were classified per convention as very major, major, and minor errors. Sensitivity, specificity, and positive and negative predictive values for susceptibility classification were calculated.

Results: 304 isolates were identified: 59% (179) of isolates carried $bla_{CTX\text{-}M}$, 47% (143) bla_{TEM}, and 4% (12) bla_{SHV}. At a breakpoint MIC of 8 mg/L, Vitek 2 produced a categorical agreement of 66.8% and exhibited very major, major and minor error rates of 23% (20/87 isolates), 5.1% (8/157 isolates) and 24% (73/304). The sensitivity, specificity, positive and negative predictive values for a susceptibility breakpoint of 8 mg/L were 94.9%, 61.2%, 72.3%, and 91.8%, respectively. The sensitivity, specificity, positive and negative predictive values for a susceptibility breakpoint of 2 mg/L were 83.8%, 65.3%, 41%, and 93.3%, respectively.

Conclusions: Vitek 2 results in unacceptably high errors rates for cefepime compared to agar dilution for ESBL-producing *E. coli*. Clinicians should be wary of making treatment decisions on the basis of Vitek 2 susceptibility results for ESBL *E. coli*.

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C041

Title.

The Diagnostic Utility of Bronchoalveolar Neutrophils And Serum Procalcitonin For Pneumonia In Intubated Patients.

Summary.

Signs and symptoms of infection, along with an abnormal lower respiratory culture, are a generally accepted model for the diagnosis of pneumonia in clinical practice. Unfortunately, clinical signs such as fever or abnormal chest radiograph are nonspecific, and lower respiratory culture results may take 48-72 hours. The uncertainty in the clinical diagnosis of pneumonia often leads to the over prescription of antibiotics to critically ill patients, a practice that has been associated with worse clinical outcomes. Biomarkers obtained from samples of blood and bronchoalveolar lavage (BAL) in critically ill patients with suspected pneumonia may allow clinicians to more rapidly identify which patients are not likely to have pneumonia. In this study, we evaluate if BAL neutrophils (BAL PMNs) < 50% and serum procalcitonin (PCT) < 1 ng/mL can identify intubated patients unlikely to have pneumonia.

Methods.

We examined endotracheally intubated patients who received a bronchoscopic or nonbronchoscopic bronchoaveolar lavage and serum procalcitonin measurement at Northwestern Memorial Hospital between January 1, 2010 and June 30, 2013. The retrospective analysis yielded a total of 88 patients with BAL PMNs and serum PCT results within 48 hours of a clinical suspicion for pneumonia. We also collected data on clinical signs of infection, results of chest roentgenogram, lower respiratory cultures, and presence of extra-pulmonary infection (EPI). An abnormal lower respiratory culture with one or more organisms at or above 10,000 colony forming units was considered diagnostic of bacterial pneumonia.

Main results.

In our sample, 25 patients had pneumonia and 29 had an extrapulmonary infection. Nine patients had both pneumonia and an EPI. There were no significant difference in presence of fever, leukocytosis and abnormal CXR in patients with pneumonia compared to patients without pneumonia. In those patients with BAL PMNs < 50% and serum procalcitonin < 1 ng/ml, none had a positive respiratory culture.

Conclusions.

These results suggest that BAL PMNs and serum PCT are useful tests to evaluate endotracheally intubated patients with suspected pulmonary infection. BAL PMNs < 50% and serum prolactonin < 1 ng/mL are highly accurate in excluding bacterial infection in critically ill patients. Further studies are needed to determine if withholding empiric antibiotics in the subset of patients with low BAL PMNs and serum PCT is a safe and effective way to limit antibiotic exposure in the ICU.

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C042

Title: Sinusitis in Latino children is associated with allergic respiratory diseases and inversely related to Native American ancestry (GALA-II Study)

Objective: The aim of this study was to better understand the burden of sinusitis among Latino children, which is poorly understood at this time.

Methods: From 2006-2011, Hispanics aged 8-21 years with and without asthma were recruited from 5 cities in the United States and Puerto Rico to participate in the GALA-II Study. Procedures included questionnaire, aeroallergen skin prick test, spirometry and blood draw. Logistic regression was used to analyze whether sinusitis was associated with allergy, ethnicity, or genetic ancestry in Latinos.

Results: Of the 4,111 subjects (mean$\pm$SD age=13.1$\pm$3.4 years, 49% males), 2,022 were asthma cases and 2,135 healthy controls. A total of 691 subjects (16.6%) reported a history of sinusitis, which was more prevalent in males (18.2% vs. females 15.5%, p=0.02), asthmatics (28.2% vs. controls 6.0%, p<0.001), and Puerto Ricans (26.9% vs. Mexicans 7.4%, p<0.001). Logistic regression analysis adjusted for age, gender, center, education level, and income showed that reported sinusitis was associated with total IgE>80kU/L (odds ratio [OR]=1.76, 95% confidence interval =1.42-2.18, p<0.001), with $\geq$1 positive allergy skin test (OR=1.53 [1.20-1.96], p=0.01), with a history of physician-diagnosed allergic rhinitis (OR=6.79 [5.57-8.29],p<0.001), and with asthma (OR=6.61[5.26-8.30],p<0.001). Genome-wide measures of genetic ancestry revealed a marked protective effect from Native American ancestry (OR=0.04[0.02-0.08], p<0.001).

Conclusions: In young Latinos, report of sinusitis was associated with atopy and allergic respiratory diseases. Native American ancestry was associated with marked protection against reported sinusitis.

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C043

Title:
Impact of Residual Disease (RD) Following Chemoradiotherapy (CRT) for Squamous Cell Carcinoma of the Head and Neck (SCCHN): A Retrospective Analysis of the Northwestern Experience

Summary:
Locally advanced SCCHN is commonly treated with initial CRT. It remains uncertain if RD detected by computerized tomography following treatment has an impact on outcome. Similarly, the utility and timing of neck dissection (ND) to resect and evaluate RD remains undefined.

Objective:
We performed a large, retrospective analysis to assess the frequency and impact of RD and the utility of a ND in SCCHN.

Methods:
A query of the electronic medical record using ICD9 codes was performed to identify patients that met the following inclusion criteria: age greater than 18, a histologically proven SCCHN diagnosed between 2003 and 2013, N1 to N3 disease, and initial treatment with CRT. Relevant clinical data were abstracted through chart review. Progression free (PFS) and overall survival (OS) was estimated using Kaplan Meier analysis, and comparisons made with log rank test. Chi square and receiver operating characteristics were used to assess size of RD as a predictive factor.

Results:
One hundred and twenty three patients were available for analysis. The median age at diagnosis was 56 years. Eight percent had N1 disease, 86% N2, and 5% had N3. Following completion of CRT, 65 patients (53%) had RD. Of these, 47 patients underwent a ND, and 9 (14%) were found to have residual malignancy. At a median follow up of 37 months, there was no difference in PFS or OS in the patients who had radiological RD ($p = 0.6$ & 0.65) or pathologically proven RD ($p = 0.55$ & 0.50) compared to those who did not. While a RD > 1 cm was associated with pathological RD ($p = .01$), it lacked specificity; size of RD was a fair predictor of residual cancer (AUC = 0.71, Figure 1). Of the 57 patients tested, 74% were positive for p16 by immunohistochemistry. Patients with p16 positive tumors appeared to have superior PFS ($p = .06$) and OS ($p = .05$), compared to those that are negative.

Conclusions:
Following CRT, while many patients have RD, only a small subset (14%) has residual active cancer. The presence of either does not impact PFS or OS. These data suggest ND may be safely avoided in most patients, and will help inform a prospective trial using PET to identify those patients most likely to benefit from surgery.

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C044
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Title: BMI, gender, and seasonal differences in metabolic stone evaluation

Introduction: Nephrolithiasis prevalence is increasing and controversy exists over the degree of metabolic evaluation for stone formers. We sought to analyze trends and findings of metabolic evaluations in contemporary recurrent stone forming populations based on body mass index (BMI), gender and seasonal variations.

Methods: Patients with a history of ≥ 1 stone were assessed by serum chemistry analysis and 48-hour urine collection, from 1998 to 2013.

Results: 2,318 samples from 1,143 patients (645 male, 498 female) were assessed. Difference in age at presentation between genders existed (males 50.3 years ± 14.1 SD, females 46.0 years ± 15.2 SD, $p<0.001$). Although 26.4% had an abnormality on serum analysis, only one patient had hypercalcemia and no gender differences existed.

87.6% of patients had an abnormality on urine analysis. Females demonstrated higher levels of calcium ($p<0.001$), uric acid ($p=0.002$) and hypocitraturia ($p<0.001$).

The majority of patients were overweight/obese (59.9%). There were significant associations between increased BMI and: hypercalciuria ($p<0.001$), hyperoxaluria ($p<0.001$) and hyperuricosuria ($p<0.001$). In normal weight, there was significant trend towards hypercalciuria, an effect dissipated with increasing BMI ($p<0.001$).

Median urine volume was 1.8 L ± 0.9 SD and many significant indirect correlations were observed: supersaturations of calcium oxalate, phosphate and uric acid ($p<0.001$).

When urinary parameters were assessed for seasonal variance, samples demonstrated significantly higher frequency of hypercalciuria ($p=0.02$), calcium/Kg ($p=0.006$) and hyperuricosuria ($p=0.02$) in warmer months.

Conclusion: The majority of contemporary recurrent stone formers have abnormal metabolic evaluations, are obese and demonstrate significant gender and seasonal differences in their results.

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C045

Title: Impact of Cardiac Physical Examination Faculty Development on Medical Student Performance: A Randomized Trial

Summary: Cardiac physical examination skills are often deficient in trainees and faculty members. Although recommended, the impact of cardiac physical examination faculty development on “downstream” trainee skills is unknown.

Objective: Evaluate the effectiveness of cardiac physical examination education for faculty and its impact on their students.

Methods: We developed an eight-hour multimodality training course featuring deliberate practice and feedback. From July 2012 to April 2013, 17 Internal Medicine hospitalists were randomized to receive training. Impact was measured on hospitalists and 56 medical students. The primary outcome was hospitalist and student performance on a cardiac physical examination interpretation test.

Results: Intervention hospitalists significantly increased their cardiac physical examination interpretation skills from 54% at pretest to 92% at posttest ($p<0.001$). However, test scores of students who worked with intervention hospitalists did not significantly increase: 52% to 56% ($p=0.26$). Students rated the intervention hospitalists as more thorough on only one element of the cardiac physical examination than untrained faculty members ($p=<0.05$).

Conclusion: An eight hour faculty development course improved the cardiac physical examination skills of faculty. Skills of medical learners did not improve. Future faculty instruction needs to be more powerful or targeted directly to learners.

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C046

Title: Clinical features of cutaneous pre-engraftment syndrome in patients receiving umbilical cord blood stem cell transplantation

Summary: Umbilical cord blood (UCB) is a stem cell source for patients without matched sibling or unrelated donors undergoing hematopoietic stem cell transplantation (HSCT). Pre-engraftment syndrome (PES) is characterized by unexplained fever and/or skin rash occurring at or prior to neutrophil recovery in double unit UCB HSCT patients. Few studies have described the clinical features of PES and outcomes related to development of acute graft-versus-host disease (aGVHD) and overall survival. Though skin rash occurs in the majority of patients with PES, little is known regarding the morphology, anatomic location, or histology.

Objective: 1) To characterize the skin lesion morphology of pre-engraftment syndrome; 2) To describe the histologic features of cutaneous pre-engraftment syndrome; 3) To characterize the relationship between pre-engraftment syndrome and aGVHD

Sample: Four patients receiving a double unit UCB HSCT at Northwestern Memorial Hospital who developed PES.

Methods: We retrospectively examined a series of double unit UCB HSCT patients who developed PES, defined as non-infectious fever and skin rash occurring before neutrophil engraftment. Data collected included skin lesion morphology and anatomic location, skin biopsy histopathology, concomitant clinical features, and outcome.

Results: Four cases were reviewed and analyzed. 3 patients were female and 1 was male with mean age of 42 years (range 25-65). Conditions requiring HSCT included peripheral T-cell lymphoma, hepatosplenic T-cell lymphoma, myelodysplastic syndrome, and acute myeloid leukemia.

Skin rash onset ranged from day +10 to +15 post-HSCT with absolute neutrophil count of 0 to 100 cells/mm^3. Lesion morphology was described as morbilliform with follicular accentuation (2/4), confluent erythema with follicular accentuation (1/4), and patchy erythema (1/4). Affected body surface area ranged from 7% to 60%. Histopathology demonstrated interface dermatitis with necrotic keratinocytes in 3/4 patients and mild spongiosis with a superficial perivascular lymphohistiocytic infiltrate in 1 patient.

2/4 patients (50%) were treated with systemic corticosteroids. All patients were diagnosed with aGVHD (3 intestinal, 1 cutaneous) between day +20 to +34 post-HSCT, and 2/4 have survived without disease relapse.

Conclusions: In our PES case series, 3/4 patients developed a morbilliform skin eruption with follicular accentuation, and the predominant histologic description was interface dermatitis with necrotic keratinocytes. These are consistent with the clinical and histologic features of cutaneous aGVHD. Systemic corticosteroids were administered in 2/4 cases, however all patients developed aGVHD and achieved 90 day relapse-free survival. Larger, prospective studies are needed to better describe the morphologic and histologic features of cutaneous PES to determine the clinical and prognostic significance of this condition, and how it differs from aGVHD. Moreover, the approach of treating PES with systemic corticosteroids needs to be further established.

C047

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Title: Adherent Basal Plate Myometrial Fibers in the Delivered Placenta as a Risk Factor for Development of Subsequent Placenta Accreta.

Background: Placenta accreta is an important cause of massive obstetrical hemorrhage, which can lead to complications secondary to blood loss and shock. Based on the depth of placental implantation or "invasion", placenta accretas are subclassified as accreta (chorionic villi directly on the superficial myometrium), increta (chorionic villi "invade" or extend into the myometrium) and percreta (complete penetration of the myometrium and serosa). This classification system leaves out the diagnosis of myometrial fibers attached to the basal plate (bpmyo) with an intervening decidual layer present between the chorionic villi and myometrium. While this entity does not meet the definition of "accreta" it does indicate inadequate separation of the placenta from the uterine wall and may represent, just like accreta, abnormally deep trophoblast penetration. The clinical significance of myometrial fibers attached to the basal plate (bpmyo) is not well understood. Bpmyo has been associated with evidence of abnormal maternal vascular remodeling in preterm deliveries and occult accreta.
Objective: To determine if there is an increased incidence of bpmyo in placentas of patients who ultimately develop diagnostic findings of placenta accreta in a subsequent pregnancy.
Methods: We searched our pathology database and clinical records for patients with a clinical suspicion or pathologic diagnosis of placenta accreta in any pregnancy between Jan 2008 and Sept 2013. Only patients with a previous placenta submitted to pathology were included in the study group. A control group consisting of patients without clinical suspicion or pathologic diagnosis of accreta and a previous placenta submitted to pathology were also collected over the same time period. H&E slides were re-reviewed and stage of "accreta" was determined for all placentas. The stages were defined as follows: Stage 0: no evidence of accreta or bpmyo; Stage 1: bpmyo with intervening decidua present; Stage 2: < 2 layers of decidual cells separating myometrium from villi or fibrin; Stage 3: changes diagnostic for accreta; Stage 4: placenta increta; Stage 5: placenta percreta. Chi-square analysis was performed using IBM SPSS Statistics 21.
Results: 49 patients were identified with a potential diagnosis of accreta and a previous placenta examined. In their index pregnancy, 62.2% had a diagnosis of accreta/increta/percreta (Stages 3-5) and 38.8% had lesser levels of bpmyo (Stages 0-2). 100 controls were also collected, none of which had clinical suspicion or diagnosis of accreta, but 15% had stage 1 and 2% had stage 2 "accreta" in their placenta. When previous placentas were examined, placenta accreta (Stage 3) was seen in 10.2% of cases versus 0% of controls in the previous placentas ($P<0.0001$). Findings suspicious for accreta (Stage 2) were seen in 24.5% of cases versus 2% of controls in the previous placentas ($P<0.0001$). Bpmyo (Stage 1) was seen in 42.9% of cases versus 32% of controls in the previous placentas ($P<0.0001$). Overall, the presence of bpmyo not diagnostic for accreta (Stage 1-2) was seen in 67.4% of cases versus 34% of the controls in the previous placentas ($P<0.0001$). The accreta stage increased from the previous placenta to subsequent placenta in 75.5% of cases versus only 10% of controls ($P<0.0001$).
Conclusions: Myometrial fibers attached to the basal plate (bpmyo) is not entirely specific for the subsequent development of placenta accreta. However, placenta accreta is frequently preceded by placental findings diagnostic of accreta (10.2%) or simply adherence of myometrial fibers to the basal plate (67.4%). Therefore, bpmyo may portend an increased risk of developing placenta accreta in a subsequent pregnancy, and should be considered an additional risk factor for accreta.

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C048

Title: Individualized Risk Communication and Lay Outreach for the Primary Prevention of Cardiovascular Disease in Community Health Centers: Preliminary Results of a Randomized Controlled Trial

Objective: Statin use for primary prevention of cardiovascular disease (CVD) has been shown to reduce CVD and all-cause mortality, yet fewer than half of high-risk individuals are treated with statins. CVD is the largest contributor to disparities in premature death by race and socioeconomic status; yet, rates of statin use among certain racial/ethnic and socioeconomic groups remain suboptimal. Data within electronic health records (EHR) can be used to identify individuals with CVD risk that is sufficiently high to warrant statin therapy. Lay outreach and individualized risk education could lead at-risk patients to seek and obtain treatment. We conducted a randomized controlled trial (RCT) at federally qualified health centers (CHCs), with a high proportion of minority and lower-income patients, to determine if a population health management intervention, compared to usual care, resulted in higher rates of documented statin treatment discussions. We report interim primary outcome results.

Methods: This RCT was conducted within three CHC networks in Illinois and Arizona. Patients were identified systematically using EHR queries. Patients (men ≥35 and women ≥45 years old) with 10-year risk for myocardial infarction or coronary death of at least 10% or greater, based on the Framingham Risk Score (FRS), with a visit to CHC within the past year, and no currently prescribed statin medication or previously diagnosed CVD or diabetes were included. The intervention consisted of a mailed letter providing individualized cardiovascular risk scores for each patient and encouraging patients to schedule a visit to discuss CVD prevention. The letter was followed by telephone outreach by CHC non-clinician care managers. Eligible patients from three waves separated in time were randomly assigned to receive the intervention immediately, or after a 1-year delay. The primary outcome was statin or cholesterol treatment discussion with a doctor or other primary care clinician within 6 months. This outcome was measured by chart review (inter-observer agreement, kappa =0.77) and included a composite of: (a.) statin prescription, (b.) statin recommendation, (c.) patient refusal of statin, or (d.) documented discussion about cholesterol treatment with no clear statin recommendation. Reviewers were blind to the study group assignment. An intention to-treat-approach was used and statistical significance was determined using an unadjusted chi-square test.

Results: Of the 662 patients included in the study, 478 (72.2%) patients have completed the 6 month observation period and are included in the interim analysis (89.5% male, mean age 60.6±9.4 years, mean LDL 133.1±25.0 mg/dL, mean FRS 15.3±5.2). 244 were randomized to intervention and 234 to control. Intervention group patients were more likely to have a documented statin or cholesterol treatment discussion within 6 months (23.8% vs. 10.3%, OR 2.73, 95% CI 1.63-4.57, p<0.001). Among patients in the intervention arm that met criteria for the primary outcome: 6.1% had a statin prescription, 0.8% had a statin recommendation without a prescription, 2.9% had a patient refusal of statin, and 13.9% had a discussion about cholesterol treatment with no clear statin recommendation. There was a significant difference in discussions about cholesterol treatment with no clear statin recommendation (13.9% vs. 6.0%, OR 2.54, 95% CI 1.33-4.88, p=0.004), but no significant difference in the other 3 categories. Intervention group patients were more likely than controls to have a CHC office visit within 6 months (70.5% vs. 52.6%, OR 2.16, 95% CI 1.48-3.14, p<0.001).

Conclusion: An individualized risk communication and lay outreach intervention targeted towards CHC patients at moderate to high risk for CVD led to a moderately large increase in statin or cholesterol treatment discussions between patients and their clinicians. Most discussions, however, did not result in the patient receiving a statin prescription. Possible explanations include: physician reluctance to prescribe, patient reluctance to take medication, or a greater emphasis by patients and providers placed on cholesterol levels rather than CVD risk levels. Patient interviews and longer-term follow up of prescribing and laboratory results will help elucidate these factors further.

C049

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Title: Developing a group-learning intervention to improve postpartum retention in care for ethnic minority HIV-infected pregnant women: initial results and lessons learned

Summary: Retention in HIV care improves outcomes, and optimizing retention is prioritized by national HIV agendas. In Northwestern University's Perinatal HIV Program (PHP), 38% of our predominantly ethnic minority patients experience poor postpartum retention. Interventions focused on retaining HIV-infected (HIV+) pregnant women are needed.

Objective: Our objective was to develop an intervention based on established group-learning programs that have demonstrated high cohort retention and positive health behaviors in pregnant, non-HIV (Centering Pregnancy, CP) and ethnic minority HIV+ (WiLLOW) women to increase postpartum retention in care in PHP patients.

Sample: We enrolled English-speaking PHP patients at ≥20 weeks gestation. They attended one 2-hour group of 5-7 women.

Methods: For intervention development, we conducted needs assessments with key informants: PHP obstetricians, social workers, and nurse practitioners and CP leaders. We adapted CP and WiLLOW principles (health education, self-assessment, support, empowerment) and materials into activities for HIV+ pregnant women (i.e., describing adequate retention in care throughout and after pregnancy, charting viral load throughout pregnancy, identifying HIV-related social support, increasing self-empowerment through positive health behaviors).Women received CP-type notebooks with adapted materials. Groups were facilitated by leaders (physicians, nurse practitioners, social workers, trained HIV+ peer educator mothers), but discussions were patient-driven consistent with CP and WiLLOW. Validated instruments (PHQ-9, ASES, MOS-SSS, BEHKA) were administered at baseline. The primary outcome is retention in HIV care (2 visits in the first postpartum year).

Results: We held 3 monthly group interventions with 5 total participants. Mean age was 33y (SD5.9), all were Black (80% immigrant), and 40% were employed. All were on antiretroviral therapy. Baseline measures suggested mild depressive symptoms [PHQ-9=5 (SD4.1)] and adequate HIV knowledge [BEHKA=6.6 (SD1.3)]. We also measured self-efficacy and social support [ASES= 84 (SD48), MOS-SSS=66 (SD39)]. All participated actively, verbalized importance of postpartum retention, and reported high satisfaction with the course, materials, and duration. Low enrollment (5/11 eligible) occurred because of self-reported schedule (i.e., work conflicts, childcare needs) and transportation issues. Poor literacy hindered completing surveys for some.

Conclusions: Group interventions appear acceptable to ethnic minority, HIV+ pregnant women. Structural barriers limit enrollment, suggesting that scheduling groups around existing prenatal appointments and/or increasing incentives may be needed. Poor literacy may limit utility of commonly-used instruments. Integrating group-learning into existing HIV care and studying its effects on clinical outcomes warrant further investigation.

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C050

Title: **A COMPARISON OF HEMOGLOBIN MEASURED BY CO-OXIMETRY AND CENTRAL LABORATORY DURING MAJOR SPINE FUSION SURGERY**

Summary: There are a multitude of factors affecting the accuracy of hemoglobin concentration values, including the type of measurement device and laboratory methodology. This study aims to evaluate if the hemoglobin concentration obtained by means of arterial blood gas co-oximetry and central laboratory techniques correlate within the stated resolution of 0.1 g/dL using simultaneous measurements of hemoglobin concentration obtained during complex spine procedures occurring at Northwestern Memorial Hospital.

Sample: 348 patients who underwent spinal fusion of greater than 3 bony levels between September 2006 and September 2010 with concurrent ABG and CBC samples were identified.

Methods: The mean difference between pairs of measured hemoglobin values was determined using limits of agreement analysis. Error grid analysis was used to delineate correlation of samples in relation to hemoglobin values within the range considered for transfusion.

Results: The median difference (ABG-CBC) between the measured hemoglobin values was 0.4 g/dL (95% CI -0.3 to 1.1 g/dL, $p < 0.0001$). Limits of agreement analysis correcting for repeated observations in multiple patients demonstrated the mean difference between measured hemoglobin values (i.e. bias) was 0.4 g/dL (95% CI 0.36 to 0.41 g/dL). However, 44.5% of paired samples were within 0.5 g/dL and there was only fair to moderate agreement between the CBC and ABG values within the clinically significant range of hemoglobin values 7 to 10 g/dL (Cohen's $\kappa = 0.39$, 99% CI 0.31 to 0.47).

Conclusions: The hemoglobin values obtained from ABG and CBC cannot be used interchangeably when verifying accuracy of novel point-of-care hemoglobin measurement modalities. Additionally, while a 0.4 g/dL bias between ABG and CBC hemoglobin values may be clinically inconsequential at higher hemoglobin values, when implementing a restrictive transfusion strategy this difference may alter transfusion management during acute blood loss.

C051

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Title: Validation of a flow-cytometry based assay to screen patients for X-linked Lymphoproliferative Disease Type-1 (XLPD-1; Duncan Disease).

Summary: XLPD-Type 1 is a rare primary immunodeficiency disease that affects ~1 in 1 million males and it is caused by a mutation in the *SH2D1A* gene which encodes the SLAM-associated protein (SAP). The overall mortality is ~75% and almost three-fourths of the patients do not progress beyond the first decade of life. SAP plays a key role in ensuring optimal functional fitness of CD8 and CD4 T cell subsets, Natural Killer (NK) cells and is also required for the development of the invariant Natural Killer T (iNKT) cells. It is not expressed in circulating B cells. Consequently, SAP-deficiency affects the ability of the host to regulate critical immune responses directed against pathogens. Morbidity in XLPD-1 patients is often associated with primary EBV infection, a ubiquitous pathogen that infects 90-95% of the population worldwide. Immunocompetent individuals are able to effectively contain EBV infection while SAP-deficient hosts experience disseminated infection, prolonged and dysregulated immune activation that generates a "cytokine-storm". These pathologic features directly contribute to the increased frequency of EBV-associated B cell lymphomas as well as hepatic and bone-marrow dysfunction observed in these patients. Given the severe health consequences associated with this disease it is vitally important to accurately identify SAP-deficiency in patients prior to their developing clinically overt disease and offer them the chance to undergo potentially life-saving stem cell transplantation.

Objective: To optimize a flow cytometry assay to detect the intracellular expression of SAP protein in human whole blood samples.

Samples: Thirty-one healthy control samples were analyzed to establish normal ranges for SAP expression in $CD8^+$ T cells, $CD4^+$ T cells and NK cells. Analysis of one known XLPD-1 patient (confirmed by genotyping) was included for the validation studies. Measurement of SAP expression in B cells was included as an internal negative control.

Methods: Anticoagulant treated whole blood samples were first fixed and permeabilized, and then stained with a purified monoclonal antibody targeting cytoplasmic SAP protein followed by treatment with a secondary fluorochrome-conjugated antibody. Background staining was determined by utilizing an isotype control monoclonal antibody. Following intracellular staining samples were stained with monoclonal antibodies targeting surface markers CD3, CD56, CD19, and CD8. Data were acquired and analyzed using flow cytometry.

Results: Results are expressed as "net-geometric mean fluorescence intensity (net gMFI)" of SAP expression (gMFI using SAP antibody-gMFI using isotype control antibody). Below are listed the "net gMFI" means±standard deviation (median) for each cell subset.

	CD8 T cells	CD4 T cells	NK cells	B cells
Healthy Controls (n=31)	**699±277 (691)**	**661±227 (706)**	**656±253 (686)**	**2±23 (1)**
XLPD-1 patient (n=1)	**43**	**3**	**6**	**6**

Conclusions: We have successfully validated a flow-cytometry based assay to screen for XLPD-1. This test will be officially offered to patients at the Diagnostic Immunology and Flow Cytometry Laboratory in the Department of Pathology of the Ann and Robert H. Lurie Children's Hospital of Chicago in conjunction with analysis for XIAP (XLPD-2) and iNKT cells.

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C052

Title: Risk of rash associated with panitumumab in cancer patients: A systematic review of the literature and meta-analysis

Summary: Panitumumab (Pan) is indicated as a single agent for the treatment of epidermal growth factor receptor (EGFR)-expressing, metastatic colorectal carcinoma (mCRC) with disease progression on or following fluoropyrimidine-, oxaliplatin-, and irinotecan-containing chemotherapy regimens.
The incidence and risk of rash have been reported, however they vary widely and have been inconsistent in published trials.
Objective: we conducted a systematic review and meta-analysis of the literature to determine the incidence and risk of developing rash.
Methods: Relevant studies were identified from PubMed database (1998-2013), abstracts presented at the ASCO Conferences (2004-2013) and Web of Science (1998-2013). Eligible studies were limited to randomized controlled trials in which patients received Pan doses of 6 mg/kg every 14 days (Q2W). Incidence, relative risk (RR), and 95% confidence intervals (CI) were calculated using random-effects and fixed-effects models based on heterogeneity of included studies.
Results: Data from 6 randomized controlled trials with a total of 2,053 patients treated with Pan in combination with: 1) best supportive care (BSC) (n=2); other chemotherapy agents (n=3) and chemoradiotherapy (n=1), and 2,032 controls were available for analysis. The overall incidence of all-grade rash for Pan was 71.3% (95% CI: 42.3% - 35.5%) while for controls was 5.6% (95% CI: 1.7%- 17.1%). The overall incidence of high-grade (grade ≥3) skin rash for Pan was 28.2% (95% CI: 21.5%-36%) compared to 1.4% (95% CI: 0.8%-2.3%) for controls group. Pan was associated with increased risk of all-grade rash (RR=10.5, 95% CI: 4.7%-23.5%; P<0.001) when compared to controls. The risk of high-grade rash was also increased (RR=22.4, 95% CI: 14.8%-33.9%; P<0.001).
Conclusions: Patients with mCRC who are treated with panitumumab are at significant greater risk for developing rash, especially high-grade rash. Moreover, we found an overall incidence of high-grade skin rash higher than the incidence has been reported to date. Further studies for prevention and treatment of this toxicity are needed in order to maintain patient's quality of life and minimize the need for dose modification, all of which may impact clinical outcome

C053

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Title: Interventions for management of Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) in the human immunodeficiency virus (HIV) population: a systematic review

Summary: Stevens Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are rare, but severe, drug-induced, mucocutaneous disorders. Although HIV-positive individuals have a greater risk of these severe and/or life-threatening adverse reactions than the general population, there exists no evidence-based assessment of various treatments utilized in this patient population.
Objective: We conducted a systematic review of literature to focus on the management of SJS and TEN in HIV positive population.
Methods: We searched Ovid Medline, Cochrane Central Register of Controlled Trials (CENTRAL), Scopus, and EMBASE databases (1980-June 2013). Search criteria included HIV-positive and human only, a clinical or histological diagnosis of drug-induced SJS or TEN, and a stated intervention with outcome. Response reporting was classified as positive outcomes (survival) or negative outcomes (death) up to 28 days post onset of reaction. Two independent investigators selected the studies that met the inclusion criteria.
Results: The search generated 908 reports. After redundant references were removed, 665 unique reports remained, of which 205 were selected for full text review. Of those, 106 studies did not meet the inclusion criteria and were excluded. A total of 89 reports, representing 565 patients were included in our final analysis. Only case reports, case series and observational studies were identified, reporting on seven different interventions with a total of 25 possible interventions/combinations
Conclusions: This systematic review of published case reports, case series and cases from observational studies shows that there remains insufficient data to provide high-level evidence-based recommendations for interventions in HIV-positive individuals with SJS or TEN. Despite this our findings are similar to those found in general population, confirming that discontinuation of the inciting drug(s) is advisable in all cases, at the earliest possible time, despite the potential for the inciting agent to be the otherwise optimal anti-HIV agent. Furthermore, the available evidence does support discontinuation of inciting drug(s) plus medicated skin-directed therapies and supportive care as an approach to management of HIV-positive patients with SJS/TEN. Although the role of corticosteroids in this population could not be determined due to the small sample size, our findings suggest that their use, alone or in combination, does not remarkably change the overall survival when compared to the other interventions. Further investigations are needed to determine the best management of SJS and TEN in HIV positive population.

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C054

Title: Postoperative Antibiotic Prophylaxis Duration and Surgical Site Infections in Autologous Breast Reconstruction

Summary: Though studies have shown that a majority of surgeons prescribe prolonged postoperative antibiotics following autologous breast reconstruction, evidence is lacking to support this practice. We analyzed data from the Tracking Outcomes in Plastic Surgery (TOPS) database to evaluate the association between postoperative antibiotic duration and the rate of surgical site infection in autologous breast reconstruction. Ours represents the largest study to date to investigate this question.

Objective: The objective of our study was to compare the rate of surgical site infections in patients undergoing autologous breast reconstruction who received postoperative antibiotics for longer than 24 hours to those whose antibiotics were discontinued after 24 hours.

Sample: The TOPS database was queried to collect data on all patients undergoing autologous breast reconstruction. Patients were identified using primary Current Procedural Terminology (CPT) codes for autologous reconstructions. 1,036 patients met criteria for inclusion in this study.

Methods: The intervention of interest for this study was postoperative duration of antibiotic prophylaxis: either discontinued 24 hours after surgery or continued beyond 24 hours. Secondary variables analyzed included patient age, body mass index (BMI), active smoking, diabetes, inpatient or outpatient admission status, and American Society of Anesthesiologists (ASA) class. The primary outcome variable of interest for this study was the presence of a surgical site infections (SSI) within 30-days of autologous breast reconstruction. SSIs included superficial incisional, deep incisional, and organ/space surgical site infections in keeping with CDC definitions. Cohort characteristics and 30-day outcomes were compared using χ^2 and Fischer's exact tests for categorical variables and Student T-tests for continuous variables. Multivariate logistic regression was utilized to control for confounders.

Results: A total of 659 patients (63.6%) received antibiotics for 24 hours postoperatively, and 377 patients (36.4%) received antibiotics for greater than 24 hours. There were no significant differences in age, BMI, race, active smoking status, ASA class, outpatient admission type, or bilaterality of procedure between the two cohorts. The rate of surgical site infections did not differ significantly between patients given antibiotics for 24 hours, or patients given antibiotics for greater than 24 hours, postoperatively (4.86% vs. 2.65%, $p = 0.084$). Furthermore, antibiotic duration was not predictive of surgical site infection in multivariate regression modeling.

Conclusions: Our study represents the largest to date to examine the association between postoperative antibiotic duration and surgical site infection rate in autologous breast reconstruction. In accordance with previously published data from smaller studies, we found no difference in the rate of surgical site infection between patients who received 24 hours of postoperative antibiotics when compared to those that received antibiotics for greater than 24 hours.

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C055

Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Where do we place the sacrocolpopexy stitch? - An MRI investigation

Summary: The sacral promontory was noted to be an intervertebral disc in 73% of MRIs reviewed. Suture placement strategies that avoid this location may avoid reduce disc-related sequalae following sacrocolpopexy.

Objective: Sacrocolpopexy presacral sutures are placed at or slightly above the sacral promontory without knowledge of the location of intervertebral discs. We used MRI to assess the anatomic relationship of the sacral promontory to intervertebral discs.

Sample: Spinal MRIs of women imaged at a tertiary care center between January 2010 and February 2012.

Methods: Sagittal T1 Flair sequence images of the lumbosacral spine were used to identify the promontory as the most prominent point where S1 intersected with the superior anatomic structures. All measurements were obtained at the midline of the spinal cord.

Results: The mean age of 73 study subjects was 59 years (range 22-89). The promontory was an intervertebral disc in many [53 (73%)] women; the remaining images confirmed a non-disc promontory at the superior aspect of S1 in 20 (27%). The distance between the promontory and the next bony structure (L5) was 13 mm (25^{th} - 75^{th} IQR 11-16). In women without disc at the promontory, median distance between the promontory and base of L5 disc was 1.29mm (IQR 1.1-2.2). The mean height of the disc was 13.3mm (4.4- 20.6mm). Age was not associated with the most prominent structure (p=0.2), nor was it correlated to disc height (p=0.27, r=0.13) or distance to L5 (p=0.75, r= 0.04).

Conclusions: Given the high proportion of women with an intervertebral disc at the promontory, suture placement strategies that avoid this location may reduce disc-related sequalae following sacrocolpopexy.

(In order to be considered for inclusion in the 2014 Research Day program, **ALL** abstracts must be in Arial, 11 pt font, and must fit one page. Any abstract exceeding criteria will be sent back for revision. Thank you.)

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C056

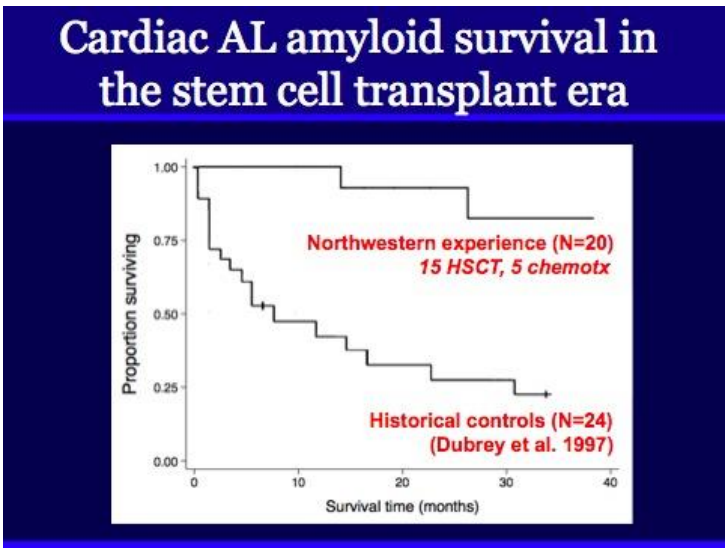
Title: Stem Cell Transplantation is Associated with Prolonged Recurrence-Free Survival in Patients with Cardiac AL Amyloidosis

Introduction: Historically, cardiac involvement in AL amyloidosis has been associated with a poor prognosis. We hypothesized that hematopoietic stem cell transplantation (HSCT) would result in improved survival in cardiac AL amyloidosis patients.

Methods: 20 consecutive patients with cardiac AL amyloidosis being evaluated for HSCT were studied using biomarkers, bone marrow biopsy, echocardiography, cardiac MRI, and cardiac biopsy. Those who underwent HSCT were compared to those who did not. Survival was compared to historical controls.

Results: 15 of 20 subjects (75%) were able to undergo HSCT. The majority were treated with bortezomib and steroids prior to HSCT. Subjects unable to undergo HSCT had higher baseline BNP (median 1640 [IQR 550-1829] vs. 311 [IQR 218-720] pg/ml) and troponin-I (median 0.21 [IQR 0.05-0.23] vs. 0.04 [IQR 0.02-0.09] ng/ml) compared to those who were able to undergo HSCT, though these differences were not statistically significant (P=0.07 and P=0.11, respectively). 13 of 15 HSCT subjects remain alive; they demonstrate improvement in NYHA functional class (2.4±0.5 [pre] vs. 1.4±0.5 [post], p<0.0001). Survival of cardiac AL amyloid patients in the current treatment era demonstrated marked improvement compared to historical controls (Figure).

Conclusions: HSCT is associated with prolonged, recurrence-free survival in patients with cardiac AL amyloidosis. Early diagnosis is essential, and cardiac AL amyloidosis should not be considered an untreatable condition.



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C057

Title: Impact of Depression on Scoliosis Research Society (SRS-22) Questionnaire after Major Spinal Surgery

Summary: The Centers for Disease Control (CDC) reports that 9.1% of adults in the United States have depression, which has been shown to be a predictor of poor outcome after scoliosis surgery. Assessing a patient's emotional health through the use of health-related quality of life questionnaires (HRQL) such as the SRS-22 may help to identify those patients who may fail after spinal fusion.

Objective: Depression has been shown to impact pain and function after spinal fusion. Our goal was to determine the effect of depression on the sub-scores of the SRS-22 questionnaire.

Methods: Consecutive adult patients who underwent elective spinal fusion ≥4 levels between 2004-2011 and had completed pre- and post-operative SRS-22 questionnaires were retrospectively analyzed with follow-up ≥1 year. Linear regression analysis evaluated BMI, history of depression, and presence of spinal malalignment at 1 and 2 years, controlling for confounders. Mean follow-up was 18.6 months.

Results: 110 patients (24M:86F) with mean age of 60.5 years were analyzed. A personal history of depression was reported by 35 patients (31.8%). 102 patients had 1 year follow-up, and 70 patients had 2 year follow-up. Patients with a personal history of depression had significantly lower pre-operative SRS-Pain (p=0.011), SRS-Function (p=0.001), SRS-Self Image (p=0.02), and SRS-Mental Health (p=0.005) scores. Patients with depression had lower SRS-Mental Health scores (p=0.019) at 1 year and lower SRS-Function (p=0.008) and SRS-Mental Health (p=0.002) scores at 2 years. Both groups showed significant improvement in all SRS sub-scores at 1 and 2 years. Regression analysis showed that depression influenced pre-operative SRS-Pain (p=0.025), SRS-Function (p=0.007), and SRS-Mental Health (p=0.013) sub-scores. Regression analysis revealed that depression also influenced 1 year SRS-Mental Health scores (p=0.013), as well as 2 year SRS-Function (p=0.020) and SRS-Mental Health (p=0.019) scores.

Conclusion: Depression is an independent predictor of not only SRS-Mental Health scores, but on pre- and post-operative SRS-Pain and Function sub-scores.

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Title: Race and Trastuzumab Induced Cardiac Toxicity

Background: Trastuzumab is a therapy with significant mortality benefit for patients with HER2+ breast cancer. Cardiac toxicity is a known complication of trastuzumab in approximately 25% of patients. Little is known about clinical factors associated with developing trastuzumab-induced cardiac toxicity (TICT). We sought to examine the role of race in TICT.

Methods: A retrospective analysis was performed on a hundred and thirty nine patients who received trastuzumab therapy for HER2+ breast cancer from January 2004 to January 2011 at Northwestern Memorial Hospital. All participants with a normal baseline echocardiogram or multigated acquisition (MUGA) scan and at least one subsequent echocardiogram or MUGA after initiation of trastuzumab therapy were included. We examined race, cardiac risk factors, chemotherapy regimens, medication use, and left ventricular ejection fraction (LVEF). TICT was defined as a reduction in LVEF of $\geq$ 10% from baseline.

Results: A total of 139 participants (average age 51, 23% black, 66% white) were examined. At baseline, age, smoking, incidence of doxorubicin use, and baseline LVEF were not different between the two groups. There were a higher proportion of blacks with obesity (BMI 31 vs. 26.4 p=0.001), diabetes (22% vs. 2%, p=0.013), hypertension (34% vs. 17%, p=0.070), and beta-blocker use (25% vs. 7.6% p=0.040). The incidence of TICT did not differ by race (34% vs. 26%, p=0.805) after adjusting for age, baseline LVEF, hypertension, and beta-blocker use (adjusted OR 1.4 [95% CI 0.5-3.8]; p = 0.500).

Conclusion: We found that the rate of LV dysfunction was similar for blacks and whites with HER2+ breast cancer. The imbalance of traditional cardiac risk factors between the two groups would also suggest that non-traditional risk factors may be implicated in TICT, which needs further study.

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C059

Title: Association of HIV infection with changes in cervical and cervico-vaginal mucus

Summary: Hindering transport of virions within the female reproductive tract (FRT) is an attractive mechanism for preventing HIV transmission. Mucosal environments vary throughout the menstrual cycle and as HIV disease progresses. Previous studies of virus and nano-particle transport within the reproductive mucosa focused on cervico-vaginal mucus of HIV –ve individuals. This study reveals the impact of immune correlates, microbial milieu and hormones on transmission mechanisms and viral transport in the FRT.

Objective: Determine the effects of HIV infection, menstrual cycle and immune response to HIV on viral transport in cervical (CM) and cervico-vaginal mucus (CVM).

Sample: We have established a cohort of 100 HIV positive and 100 negative women to study correlates of modulated transport phenotypes. CM and CVM are collected, along with mucosal antibodies, vaginal smears, hormone levels, and medical and behavioral history.

Methods: Viral transport and capture assays employ a panel of viral isolates, to test clade specific effects.

Results: Unexpectedly, the cervical mucus of HIV infected women is more permissive to viral transport, with greater magnitude and a less hindered mode of viral diffusion. Menstrual cycle phase also correlates with viral movement. Isolation of mucosal antibodies shows cross clade binding specificity is present amongst chronically infected women. The presence of bacterial vaginosis (BV) is positively correlated with transport in CVM, while aging correlates negatively with viral and bead mobility.

Conclusions: Correlates of altered diffusion are not restricted to HIV-specific, adaptive responses but are also derived from nature of mucus. The effect of HIV-1 infection in the FRT appears to be analogous to a "runny nose" response to pathogen clearance.

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C060

Title: Co-existence of psoriasis and melanoma in a large urban population: a cross-sectional study

Background: Psoriasis has been linked to increased malignancy risk, particularly lympho-hematopoietic and non-melanoma skin cancers; however its association with cutaneous melanoma remains unclear.

Objectives: The aim of this study was to determine if there is an association between cutaneous melanoma and psoriasis in a large, urban population of nearly 2 million individuals, through an academic-based electronic medical record database.

Methods: We used our institution's electronic medical record database from 1/2001 to 11/2013. Total study population was 1,857,125 individuals. Subjects were identified by ICD-9 codes (psoriasis: 690.0, 690.1; melanoma: 172.0 - 172.9; atopic dermatitis (AD): 691.8). Melanoma diagnosis was included only if reported subsequent to a psoriasis diagnosis. Odds ratio (OR) was obtained for association between cutaneous melanoma and psoriasis. The OR was then adjusted for phototherapy, an established risk factor for melanoma in psoriasis. To minimize detection bias related to psoriasis patients receiving comprehensive skin examinations, the same analysis was performed to obtain OR for association between cutaneous melanoma and atopic dermatitis.

Results: We identified 12,554 patients with psoriasis, 82 of whom had a subsequent diagnosis of cutaneous melanoma. We detected a significant association for melanoma in psoriasis (OR= 2.09; 95%CI 1.68-2.60; p <0.0001; total n=1,857,125). After adjusting for phototherapy, a modified OR still showed a significant association between cutaneous melanoma and psoriasis (OR= 2.16; 95%CI 1.72-2.70; p <0.0001). The OR for melanoma in atopic dermatitis showed a significant inverse association between the two diseases (OR= 0.43; 95%CI 0.22-0.83; p=0.008).

Conclusions: Our findings suggest that melanoma is associated with psoriasis in this population. However, various other potentially important confounding factors were not included in this analysis. Further studies to explore this association in other populations are warranted.

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C061

Title: Mathematical Neuro-Oncology: Translating a Days Gained Metric into the Clinic

Summary: Our lab has developed a comparative metric to analyze the efficacy of treatments for glioblastoma multiforme (GBM). Using our established mathematical model which utilizes patient-specific growth parameters—net rates of invasion (*D*) and proliferation (ρ), obtained from measuring T1+contrast and T2-weighted MRIs from multiple dates prior to treatment—we are able to attain a growth velocity that can be projected out as an untreated virtual control (UVC). Once the UVC is calibrated, tumor volume after treatment is measured in order to elucidate whether or not the treatment regimen is causing the *actual* tumor burden to deviate from the UVC's projected growth pattern, accounting for patient-to-patient heterogeneity in GBM growth dynamics. Comparing the actual tumor to the UVC enables us to calculate a patient-specific "Days Gained" score, a metric developed in our lab, to estimate the number of days a therapy delayed imageable tumor progression. From this score, we can predict survival. Ideally, the goal is to get our methodology into a clinical setting in order to provide prognostic information for individuals suffering from GBM and to empower the physician in a way that would allow them to make decisions concerning the patient's course of treatment.

Methods: In order for patients to be eligible for analysis, they must have two MRIs prior to treatment for both the T1+contrast and T2 modalities to account for "actual" tumor and edema. Enhancing regions in T1+contrast (disease) and hyperintense areas in T2 (edema and potential disease) are measured by applying a signal intensity threshold and tracing. Areas of necrosis, identified as hypointense signal enclosed by regions of enhancement on T1+contrast, is included as part of the tumor volume as well. From these measurements we are able to calculate a growth rate and a UVC for that particular patient.

Discussion: Our current metric has proven accurate, but has only been used retrospectively and should be further evaluated through a randomized phase-III trial. In practice, tumor segmentation poses a significant challenge. Segmentation has been found to be far more accurate when conducted on a semi-automated level; thus, sufficient technological resources, training and manpower is needed to incorporate this into a clinical setting. Our lab is actively working to streamline this approach even more in hope that it can be easily integrated into the clinic. An accurate measurement of tumor volume is essential in establishing patient-specific parameters of D and ρ. Although the current clinical method of tumor measurement is maximum perpendicular diameter, this is not as accurate as actual tumor volume in depicting tumor burden. Change in volume is of particular interest due to the high level of invasiveness seen in GBM. Adding to this complexity is the unique dynamics seen on an individual level, leading to our model incorporating patient-specific growth parameters. Ideally, future care will be provided prospectively for the individual using parameters specific to their disease.

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C062

Title: LACK OF ASSOCIATION BETWEEN BREAST RECONSTRUCTIVE SURGERY AND THE DEVELOPMENT OF CHRONIC PAIN AFTER MASTECTOMY: A PROPENSITY-MATCHED RETROSPECTIVE COHORT ANALYSIS

Objective: To compare if mastectomy with reconstructive surgery had greater incidence of chronic pain compared to mastectomy surgery alone.

Methods: The study was approved by the Northwestern IRB. Patients who underwent mastectomies with and without reconstruction were contacted and asked to participate in this retrospective cohort study. Subjects responded to the modified short form Brief Pain Inventory and the short form McGill pain questionnaire to identify and characterize pain at least 6 months after the surgical procedure. Demographic, surgery, cancer treatment and perioperative characteristics were recorded. Propensity matching analysis was used to control for covariates differences in the study groups. Logistic regression analysis was then performed to estimate the odds ratio for the propensity matched groups. A $P < 0.05$ was required to reject the null hypothesis.

Results: Three hundred and ten subjects were included in the study. The median time (IQR) time from last surgery to subject's evaluation was 17 (8 to 27) months. 132 patients (43%) reported the presence of chronic pain. Baseline unadjusted surgical and patient characteristics were significantly different in regards to age, body mass index, type of surgery and radiation therapy between the group of patients who had reconstructive surgery and the ones who did not have reconstructive surgery. The unadjusted incidence of chronic postsurgical pain was not different between the mastectomy/ no reconstruction group, 31 out of 78 (39%) compared to the mastectomy/ reconstruction group, 101 out of 232 (43%), P=0.6. After propensity score matching to adjust for covariate imbalances, the incidence of chronic pain in the mastectomy group who had additional surgery for breast reconstruction was not different compared to the group who had mastectomy surgery alone, 26 out of 68 (38%) and 27 out of 68 (39%), respectively P = 1.0. Among patients who had chronic pain, breast reconstruction did not increase the intensity of worst pain in the last 24 h, median (IQR) of 2 (1–5) compared to 4 (1–5) in the no reconstruction group, P = 0.41. Type of reconstruction (breast implants vs. flap tissue) did not result in greater incidence and/or intensity of chronic pain.

Conclusions: Breast reconstruction after mastectomy does not result in a greater incidence of chronic pain compared to mastectomy alone. In addition, plastic reconstruction did not lead to greater pain intensity scores in patients who developed chronic pain. Female patients undergoing breast cancer surgery should not incorporate chronic pain in their decision to undergo reconstructive surgery after mastectomy.

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C063

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Title: Efficacy of Neuraxial Analgesia for Labor in Women with a History of Surgical Correction for Scoliosis: A Prospective Observational Study

Introduction: Data on neuraxial labor analgesia failure rates in women with surgical correction for scoliosis range from 6-50% and are pooled from case reports and retrospective series.(1-5) We performed a prospective observational study evaluating analgesic efficacy of combined spinal-epidural (CSE) or traditional epidural techniques in laboring women with spinal instrumentation for scoliosis repair. We hypothesized that women with prior spinal instrumentation (SI) would require more epidural bupivacaine to attain effective analgesia than case-matched controls (CONT).

Methods: In this case-matched cohort study, 41 SI and 41 CONT subjects were needed to detect a difference of bupivacaine consumption 2.2 mg/h of labor analgesia. The CONT subject was case-matched for anesthesia provider and recruited after neuraxial placement in the SI subject. At the anesthesiologist's discretion, analgesia was initiated with CSE or epidural technique and maintained with patient controlled epidural analgesia with bupivacaine 0.625%/fentanyl 2 µg/mL (bolus 5 mL q10 min, basal rate 15 mL/h). For supplemental analgesia, bupivacaine 0.125% (15 mL) was given and the infusion changed to bupivacaine 0.11%/fentanyl 2 µg/mL. Secondary outcomes included: switching to a more experienced provider, needle redirections and interspaces attempted, supplemental analgesia, analgesic failures and complications. Groups were compared using chi-squared or Mann-Whitney U tests. $P < 0.05$ was significant.

Results: Data were evaluated for 82 patients. Gravida, parity, BMI, time to delivery and mode of delivery were not different between groups. There was no difference in bupivacaine consumption (SI 16.0 mg/h vs. CONT 15.2 mg/h, median difference 0.9 (95% CI -1.4 to 2.9)(P=0.43)) or supplemental analgesia requirements. The number of redirections, interspaces attempted and time to placement were longer in the SI group; 5 cases in the SI group and 0 in the CONT group required a more experienced provider due to difficult placement or analgesic failure (P=0.01). There was one dural puncture in the SI group. (Table)

Conclusions: Women with spinal instrumentation for scoliosis repair have equivalent hourly bupivacaine consumption as those without prior back surgery for neuraxial labor analgesia; however, the neuraxial procedure is technically more difficult.

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C064

Title: OVERESTIMATION OF MORTALITY RISK AND PREOPERATIVE ANXIETY IN PATIENTS UNDERGOING GERNERAL SURGERY: A PROPENSITY MATCHED ANALYSIS

Introduction: Deficiencies in risk communication have been identified in perioperative medicine. Objective measurement of risk overestimation by general surgery patients has not been performed. In addition, it is unknown if surgical risk overestimation is associated with the development of preoperative anxiety. The main objective of the current investigation was to examine the association between estimation of surgical mortality risk and the development of preoperative anxiety.
Methods: Patients estimation of surgical morality risk was compared to the actual mortality risk obtained by the American College of Surgeons national database. Preoperative anxiety was evaluated using a validate instrument. Propensity matched analysis was performed to examine an independent association between mortality risk overestimation and preoperative anxiety.
Results: 138 patients completed the study. 40 out of 138 (29%) patients overestimated their surgical mortality risk by at least 5%. 31 out of 138(22%) patients estimated their surgical mortality risk by at least 10%. Female gender and subjects with less than a high school education level were more likely to overestimate risk by >5%. Patients who overestimated mortality risk (≥5%) were more likely to have postponed the surgery voluntarily, 9 out of 40(23%) compare to patients who did not overestimate risk, 1 out 98 (1%), P<0.001. After propensity matching to control for covariate imbalances, overestimation of mortality risk was associated with the development of preoperative anxiety, OR (95%CI) of 9.5 (2.7 to 32.9).

	Overestimate Risk (≥5%) (n=40)	Overestimate Risk (<5%) (n=98)	*P* Value
Age(years)	56±16	51±15	0.1
Gender			<0.001
Male	5 (10%)	46 (90%)	
Female	35 (40%)	52 (60%)	
Race			0.06
Caucasian	24 (24%)	76 (76%)	
Non-Caucasian	16 (42%)	22 (58%)	
School degree			0.03
Less than High School	3 (60%)	2 (40%)	
High School	8 (27%)	21 (73%)	
College	22 (28%)	57 (72%)	
Graduate	7 (16%)	37 (84%)	

Discussion: Overestimation of perioperative mortality risk is common in patients undergoing general surgery and it is associated with preoperative anxiety and voluntarily delay of surgery by patients. Improved communication strategies are needed to minimize misleading risk perception in surgical patients.

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C065

Title: THE INCIDENCE AND SEVERITY OF PHYSICAL PAIN SYMPTOMS IN 993 PATIENTS WITH MARFAN SYNDROME: A CROSS SECTIONAL COHORT STUDY

Introduction: Marfan syndrome is an autosomal dominant disorder of connective tissue that leads to increased incidence of musculoskeletal abnormalities. The incidence and severity of pain has not been well-characterized in this population.

Methods: A web-based survey was distributed to all individuals on the Marfan Foundation listserv. Respondent were queried to the presence, frequency, severity, location, quality and treatment of their pain using the Brief Pain Inventory (BPI) and the Short Form McGill Pain Questionnaire (SFMPQ). The primary outcome of the study was the presence of pain symptoms in respondents during the seven day period preceding the completion of the survey.

Results: 2,567 participants responded, 1,418 reported a diagnosis of Marfan syndrome or a connective tissue disorder and 993 patients reported that the diagnosis of Marfan syndrome was verified by genetic testing or by the Ghent criteria as assessed by a physician. 67% (659 of 986) reported pain related to Marfan syndrome in the seven days preceding completion of the survey. Median daily pain (IQR) was 4 (3 to 5) and median (IQR) for worst pain was 7 (5 to 8) on the Numerical Rating Scale (NRS). Body regions with a high incidence of pain included the back (77%) and feet (49%). Of female respondents, 77% reported pain associated with Marfan syndrome compared to 70% of males (difference 7%, 95% CI 0.5 13.5%, *P*=0.03). Females and males reported identical median (IQR) daily average pain scores [NRS 4 (3 to 5) *P*=0.15] and worst daily average pain scores [NRS 7 (5 to 8); *P*=0.53]. Oral analgesics were used by 56% of the respondents but over half (55%) had less than 50% improvement. Only 28% of patients with pain report having an interventional pain procedure. A majority (52%) of respondents rated "chronic pain care" from their physicians as either "poor" or "fair"; less than 20% reported "chronic pain care" from their physicians as "very good" or "excellent".

Conclusion: We found a high incidence of pain and ineffective treatment in a cross-section survey of patient with Marfan syndrome. Our findings suggest that there is an opportunity to improve patient and provider awareness of pain management options in the Marfan population and to develop effective algorithms to treat this very common aspect of Marfan syndrome.

C066

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Title: Resilience to Discrimination and Rejection among Young Sexual Minority Men

Background: Due to their experiences with societal stigma and discrimination, individuals belonging to a sexual minority group are at an increased risk for mental health difficulties. Despite the fact that the majority of LGBTQ youth do not incur these adverse mental health outcomes (Institute of Medicine, 2011), relatively little is known about the protective factors that help to prevent psychopathology. Indeed, researchers have called for expanded research on a resilience, rather than a deficit, approach to better understand vulnerable populations.

Methods: This investigation aims to develop a greater understanding of resilience processes among young sexual minority men. The sample consists of participants in a longitudinal study, called "Crew 450," of young men (enrolled when 16-20 years old) who identify as gay or bisexual, or have had sex with a man (Mustanski, Johnson, Garofalo, Ryan, & Birkett, 2013). A subset was enrolled who had experienced at least one form of family-based discrimination while at the same time evidencing sub-clinical levels of depressive and anxiety symptoms at their most recent two Crew 450 assessments. These individuals completed an semi-structured interview regarding their coping behaviors, social support network, attitudes toward sexual orientation, and experiences with family members, coming out, and discrimination. Interviews are being coded using a constant comparative technique within a critical realist approach to qualitative analysis.

Results: Thus far, we have completed interviews with eight of the 12 young men who will participate. Participants' ages ranged from 18-22 (*M*=20.1). There were 4 non-Hispanic Black participants, 3 Hispanic/Latino participants, and 1 non-Hispanic White participant. 4 participants self-identified as gay, 3 as bisexual, and 1 as a bisexual transgendered female. Preliminary themes highlight the importance of social support; high self-esteem and positive attitudes toward sexual orientation; cognitive reframing of discriminatory events; external attributions for discrimination; and several coping styles including solution-approach coping.

Conclusions: Preliminary results suggest a wide variety of coping strategies and personal resources that may help to buffer youth from discrimination. Descriptions of resilience processes gained from this study can inform mental health interventions for young sexual minority males including strengthening social support systems, improving global self-evaluations and those related to sexual orientation, cognitive processing and re-attributions for discriminatory events, and coping skills training.

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C067

Title: Perception of Body Image after Tracheostomy

Summary: Limited information exists on body image perception after tracheostomy. We hypothesized that post-tracheostomy patients had a negative body image and avoided social interactions. We used the naturalistic inquiry (1) approach to survey the post-tracheostomy patients. Most patients with tracheostomy were not embarrassed or emotionally uncomfortable, and did not avoid social situations.

Objective: The goal of our study was to assess the perception of body image in tracheostomy patients and its impact on their life.

Sample: Following approval of the study protocol by the IRB, we surveyed patients who underwent tracheostomy over a 36-month period at our institution and, additionally sent an invitation on “Yahoo.neckbreathers.com” website for post-tracheostomy patients.

Methods: The qualitative strategy of naturalistic inquiry was used to code the narrative data to categorize responses and develop themes. Four questions about body image were included in the researcher-designed questionnaire.

Results: A total of 36 patients responded to our qualitative survey. Disposition of patients: 47% went home after hospital discharge, 47% went to a rehabilitation or nursing facility, and 6% were decannulated prior to discharge. Majority of patients were concerned with others’ thoughts about their tracheostomy (67%), but were not embarrassed or emotionally uncomfortable (58%), did not avoid social situations (67%), and did not think that they made others uncomfortable (58%). Regarding responses, patients referred to social activity (16%), mentioned being uncomfortable in social settings (15%), explained why they were not concerned about body image or others’ reactions (13%), gave details about social interactions (13%). By contrast, some were concerned about their appearance and scar (13%), while others had positive feelings about their tracheostomy (4%).

Conclusions: Most patients with tracheostomy were not embarrassed or emotionally uncomfortable, and did not avoid social situations. Themes revolved around others’ reactions during social activities, where patients described initial discomfort, but over time tended to disregard the negative reactions of others.

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C068

Title: ASA class is a reliable independent predictor of medical complications and mortality following surgery

Objective
The purpose of this study was to evaluate the efficacy of the American Society of Anesthesiologists Physical Status (ASA PS) classification system as an independent predictor of post-operative medical complications and mortality in a multi-institutional setting.

Background
Predicting surgical outcomes is an ongoing pursuit in the medical research community. Though risk calculators have been developed using ASA PS, there have been no large, multi-institutional studies evaluating its independent predictive value.

Methods
Patients from a range of surgical specialties with reported ASA PS were isolated from the 2005-2012 American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database. Preoperative covariates significantly associated with post-operative medical complications and mortality were used in a multiple logistic regression to determine the independent predictive value of ASA PS for complications and mortality.

Results
2,297,629 cases were isolated from the database. At each increasing level of ASA PS (1-5), significant increases in the likelihood of medical complications and mortality were observed. Odds ratios from 2.049 to 63.254 (medical complications) and 5.769 to 2011.921 (mortality) were seen under multiple logistic regression analysis; for both groups there was no overlap in odds ratios for increasing ASA PS ($p<0.05$). Standardization of ASA PS by CPT code as well as subgroup analyses between surgical specialties and the three most common procedures demonstrated similar results.

Conclusion
By a detailed analysis of over 2 million surgical cases from a national, multi-institutional database, this study provides compelling evidence that ASA PS can be used independently as a predictive tool for post-operative medical complications and mortality. ASA PS is an effective tool to estimate risk for physicians and patients.

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C069

Title: Associations Between Menstrual-Related Symptoms and Contraception Method in Women with Inflammatory Bowel Diseases

Summary: Women with inflammatory bowel diseases (IBD) commonly report an increase in their IBD symptoms related to their menstrual cycle. Hormonal contraceptives are used to manage other disorders with cyclical symptoms and the type of symptom often influences method choice, such as use of a method that decreases bleeding days when menstrual-related cramping is reported. Hormonal contraceptives are safe in women with IBD and frequently used for reproductive planning, but data is lacking on the prevalence of contraception use in the population of women with IBD and the association of menstrual-related IBD symptoms with contraceptive method.

Objective: The objective of this study is to assess associations between the type of menstrual-related IBD symptom that women report and the mode of contraception that they use.

Sample: The sample is comprised of female, reproductive age, Crohn's disease or ulcerative colitis patients in an academic practice.

Methods: Participants were identified by electronic database query, sent an opt-out letter, and then contacted for phone survey. Questions included demographics, medical and reproductive history, and current contraceptive use. Women were also asked about any menstrual-related IBD symptoms. We calculated proportions and medians/means and used Chi-square for comparisons.

Results: 121 female participants (31% response rate) are predominately white with at least some college education; 75 are current contraception users and 70 report menstrual-related IBD symptoms. Of the women who report menstrual-related IBD symptoms, 40% have ulcerative colitis and 60% have Crohn's. 27% have had IBD-related surgery. 46% have been pregnant, with median parity of 0, and 57% desire future pregnancy. 63% of this population currently uses regular contraception, while 27% does not. The most commonly reported menstrual-related IBD symptoms are diarrhea, cramping, abdominal pain, and nausea. There is no significant difference between the type of menstrual-related IBD symptom that women report and the mode of contraception they use (Mirena IUD, Paraguard IUD, implant, sterilization, estrogen-containing hormonal methods, progesterone-only pill, Depo shot, condoms) [*p* value for association: 0.814 for no symptoms, 0.817 for diarrhea, 0.45 for cramping, 0.594 for abdominal pain, 0.726 for other symptoms].

Conclusions: In a subset of women with IBD who report menstrual-related IBD symptoms, this study demonstrates no association between the type of symptom that women report and their choice of contraception method. As the mechanism of action for different contraceptive methods varies, understanding the cyclical symptoms reported by women with IBD could assist in counseling on method selection for optimal symptom mitigation. This study is limited by small sample size and further research in this area is needed.

C070

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Title: Ten-Year Outcomes Data after Cervical Spine Surgery at a Single Academic Institution

Introduction
The rate of cervical spine surgery has increased by 206% between 1992 and 2005 amongst Medicare beneficiaries. Complications during and after spinal surgery are relatively common and are more likely to occur in older patients and those with medical comorbidities. Complications, length of stay, and hospital readmissions undoubtedly increase cost, lending further uncertainty to the value of spine surgery. Identifying the incidence and predictors of these events may help guide clinical decision-making before and after surgical intervention. The purpose of this study is to determine clinical factors and patient comorbidities that correlate with complications, length of stay, and hospital readmissions among patients undergoing cervical spine surgery at a single, tertiary academic medical center.

Methods
The Electronic Data Warehouse (EDW), which contains all inpatient and outpatient medical records from one institution, was retrospectively reviewed for patients over 18 years of age that underwent spine surgery from 2003-2013. All patient data was collected by independent EDW staff and was de-identified. Patients selected for the analysis were identified using the ICD 9 and CPT procedural codes for cervical fusion. Demographics, comorbidities, pre-operative labs values, operating room time (OR time), length of stay (LOS), adverse outcomes, readmissions and cost were all assessed. A modified Charlson Comorbidity Index, excluding AIDS, was used to determine the comorbidity of each patient in the study. This data was then compared to a “control” group (white males, 30-40 years old, BMI between 18.5-25, and no documented comorbidities). A p value of $P < 0.001$ was considered statistically significant.

Results
In, 2406 patients that were identified dysphagia (n=130) was the most common complication, affecting 5.4% of patients. Using the Charlson Comorbidity Index as a predictor of post-operative complications, for every one point increase in the comorbidity index there was a significant increase in OR time, LOS, thirty-day (0-30) readmission,sixty-day (31-60) readmission, deep vein thrombosis, pneumonia, acute renal failure, wound infection and pulmonary embolism. The predictors for increased LOS included African American race, age <30 years, age between 50 and 69 years, age >70 years, congestive heart failure, and mild liver disease. Conversely, female gender and having a BMI 25-30 reduced LOS by 35 hours ($p<0.001$) and 32 hours ($p<0.001$) respectively. The predictors for increased OR time included age between 50 and 69 years, age >70 years, underweight with a BMI of 10 to 18.5, and metastatic solid tumor. Inversely, female gender decreased the OR time by 18.604 minutes compared to the control population. Thirty-day readmission included 110 patients (4.57% of patients) and was associated with patients <30 years old and >70 years old. Sixty-day readmissions included 50 patients or 2.1% of the patient population, but there was no significant association to specific patient demographics or comorbidities.

Conclusions
Analysis of complications after cervical fusion showed a strong association between increases in the Comorbidity Index and increased OR time, LOS, thirty-day readmission, sixty-day readmission, deep vein thrombosis, pneumonia, acute renal failure, wound infection and pulmonary embolism. Physicians should distinguish patients with the risk factors identified in this study for increased post-operative complications, OR time, LOS and readmission, in order to better assess associated peri-operative and post-operative complications more promptly.

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C071

Title: Impact and risk factors for inadequate bowel preparation during inpatient colonoscopy

Summary: Colonoscopy is the most commonly performed endoscopic procedure. Poor bowel preparation quality may lead to longer, more difficult procedures with a higher risk of incomplete and cancelled exams as well as missed pathologic lesions. Inpatient status is a known risk factor for inadequate bowel preparation (Ness et al, 2001) though few studies have examined its impact on inpatients undergoing colonoscopy. Furthermore, risk factors for inadequate preparation in inpatients have not been identified.
Objectives: 1) Determine the frequency and impact of poor bowel preparations in inpatients undergoing colonoscopy, and 2) Determine the risk factors for poor inpatient bowel preparations.
Methods: A retrospective review of patients who underwent an inpatient colonoscopy at Northwestern Memorial Hospital over a four-month period (01/2013-04/2013). An inadequate bowel preparation was defined as patients who had a poor preparation at the time of colonoscopy or who had their colonoscopy delayed one or more days for an insufficient preparation.
Results: In total, 150 patients were identified over a four-month period who met inclusion criteria. Of these, 70 (46.7%) had a good or excellent preparation; 45 (30%) a fair preparation; and 35 (23.3%) a poor/unsatisfactory preparation. Eleven (7.3%) patients after undergoing colonoscopy were recommended to have a repeat colonoscopy during the same inpatient admission secondary to poor bowel preparation. Seven (4.7%) procedures were delayed for poor or incomplete bowel preparation. Of the patients who had delayed procedures, the mean delay was 1.7 days (range 1-3 days). In total, 42 patients had either a poor preparation or had their procedure delayed due to an inadequate preparation (Table 1). The median length of stay in patients with an inadequate preparation was 2 days longer (7 vs. 5) though this did not reach statistical significance. Patients on antiplatelet or anticoagulation medications and patients on the surgical service were more likely to have an inadequate preparation.

Table 1:

	Adequate Preparation (n=108)	*Inadequate Preparation (n=42)*	*P value*
Mean (SD) age (y)	54.5±17.7 (range 18-92)	54.0±19.9 (range 22-88)	0.89
Female Gender (%)	51.9% (56/108)	54.5% (24/42)	0.59
Caucasian (%)	57.7% (60/104)	42.5% (17/40)	0.14
ASA PS ≥3	40.7% (44/108)	54.8% (23/42)	0.15
Prior colonoscopy	78.0% (71/91)	66.7% (26/39)	0.19
On ASA, Plavix, and/or anticoagulation	25.0% (27/108)	47.6% (20/42)	0.01
Diabetes	16.7% (18/108)	14.3% (6/42)	0.81
GI Bleeding as Procedure Indication	37.0% (40/108)	35.7% (15/42)	1.00
GI Complaints on admission	78.8% (85/108)	85.7% (36/42)	0.37
Admission to surgical service	6.5% (7/108)	27.3% (12/42)	< 0.01
Median length of stay, days	5	7	0.24

Conclusions: In this cohort of 150 inpatients undergoing colonoscopy, nearly one-third had their procedures delayed or underwent a colonoscopy with a poor bowel preparation, highlighting this as a critical quality of care issue with potential financial implications due to delayed or repeated procedures. Data collection is ongoing, but suggests that implementing changes to decrease the number of patients with an inadequate bowel preparation may have significant impact on patient care and hospital cost.

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C072

Title: Phthalates and Phthalate Alternatives: Effects on Proliferative and Estrogenic Target Genes in Ishikawa Cells

Summary: Phthalates are used as plasticizers in many of the products found in medical, household, and industrial applications. As these chemicals are ingested, the mechanism by which they affect the reproductive system is largely unknown. The purpose of this study was to observe how 2 phthalates, Di-n-butyl phthalate (DPB) and Diisononyl phthalate (DINP), and 2 phthalate alternatives, Dioctyl terephthalate (DOTP) and BHT (butylated hydroxytoluene), tested in conjunction with and without estradiol, affect uterine cells in comparison to vehicle treatment and 17β-Estradiol treatment. RT-PCR was used to observe changes in expression of mRNA with chemical treatment. Results show that based on change in the genes CD1, C-myc, ERα, PR, WISP2,PS2, and SDF-1 , each of the chemical treatments (in conjunction with and without estradiol) increased proliferation in Ishikawa cells. All compounds also led to upregulation of a majority of the estrogen mediated genes tested. These results opened possible classifications for mechanisms of these compounds and led to evidence that these phthalates and phthalate alternatives can be classified as potential endocrine disruptors based on increase of proliferative and estrogen-mediated gene action, supporting the hypothesis.

Objective: The purpose of this study was to observe and compare the effects of two phthalates, DBP and DINP, and two phthalate alternatives, DOTP and BHT, (combined with and without estradiol) in comparison to vehicle and 17β-estradiol (E2) treatments on target genes affecting proliferation and estrogenic function in Ishikawa cells. It was hypothesized that the ability of each phthalate to affect expression of each target gene will vary based on mechanism of action. It was also hypothesized that treating the cells with each compound in combination with estradiol will show a trend in gene expression that is consistent with the effects observed by treating cells with the compound only.

Sample: DBP, DINP, DOTP, BHT, DBP+E2, DINP+E2, DOTP+E2, BHT+E2, E2, and control group at 10^{-5} concentration for 24 hours.

Methods: Ishikawa cells were treated with DBP, DINP, DOTP, BHT, DBP+E2, DINP+E2, DOTP+E2, BHT+E2, E2, and control group at 10^{-5} concentration for 24 hours. Cells were directly lysed and RNA was collected. RNA was reverse-transcribed and reverse-transcription polymerase chain reaction (RT-PCR) was completed with Comparative CT (cycle count) in order to observe fold changes of the proliferative and estrogen-mediated genes (ERα, PR, Cyclin D1, C-myc, PS2, SDF-1, and WISP2) in comparison with housekeeping gene GAPDH. Fold change was calculated based on comparison of each treatment to control group only. ANOVA test was used in order to determine statistical significance of fold changes.

Results: The results of this study have opened up options to categorize the mechanisms of four frequently used phthalates/phthalate alternatives. For many of the genes tested, the same trend of increase or decrease is observed in the results of both experiments, due to the endocrine disrupting nature of the compounds, even when E2 is present in the cell in addition to just the potential EDC. Based on these trends, it is observed that DBP, DINP, DOTP, and BHT lead to upregulation in genes that induce proliferation. In addition, these compounds also lead to overexpression of estrogen-mediated genes, making it possible to classify them as potential endocrine disrupting compounds. In some cases where trends were not parallel, interaction between the compound and estradiol (before binding with the certain gene receptor) must be considered and can be attributed to the abnormal trends or random trends seen in this study. In addition, this study has also shown that observing changes in expression of estrogen-mediated genes with addition of chemical treatment and documenting these trends in comparison to natural hormones may help us better understand the potential effects and diseases that these chemicals can cause when ingested in excess.

Conclusions: We can declare DBP, DINP, DOTP, and BHT as potential endocrine disruptors because they increase expression of proliferative and estrogen-mediated genes for the most part. This study found that the treatment groups changed proliferation of Ishikawa cells. DBP and DOTP may follow mechanisms similar to estradiol while DINP and BHT may follow mechanisms more similar to progesterone. This study provides a beginning insight into the possible mechanisms that compound uses within the cell and how compound interacts with natural hormones in the cell. Therefore, it is important to control the use of these substances in industrial, medicinal, and household products because of the effects of these chemicals on the female reproductive system.

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C074

Title: Readability Evaluation of Internet-Based Patient Education Materials Related to the Field of Anesthesiology

Summary: Online patient education materials are frequently utilized by patients in an effort to understand therapeutic interventions such as anesthesia and surgery. However, limited health literacy is frequently a barrier for patient comprehension of medical information content. In an effort to provide understandable content to a diverse audience, it is recommended that patient education materials should be written at a 6th grade level. Readability examination of online patient education materials related to the anesthesiology field has not been performed.

Objective: The main objective of the current investigation was to assess the readability of internet based patient education materials related to the field of anesthesiology. We hypothesized that the majority of patient education materials would not be written according to current recommended readability grade level.

Methods: Online patient education materials describing procedures, risks and management of anesthesia related topics were identified using the search engine Google (available at www.google.com) using the terms " anesthesia", " anesthesiology", "anesthesia risks" and "anesthesia care". Assessments of content readability were performed using validated instruments (Flesch-Kincaid Grade Formulae, the Gunning Frequency of Gobbledygook , the New Dale-Chall Test , the Fry graph and the Flesch reading ease score).

Results: 96 websites containing internet patient education materials (IPEMs) were evaluated; the complete reference list of documents is presented as a supplementary material. 23 IPEMs were originated from academic departments or society organizations, 32 from clinical practices and 41 from miscellaneous sources. The median (IQR) readability grade level for all evaluated IPEMs was 13.5 (12.0 to 14.6). All the evaluated documents were classified at a greater readability level than the current recommended readability grade, $P<0.001$. Readability grades were not significantly different among different IPEM sources. Assessment by the Flesch reading ease test classified all but 4 IPEMs as at least fairly difficult to read.

Conclusions: Internet based patient education materials related to the field of anesthesiology are currently written far above the recommended readability grade level. High complexity of written education materials likely limits access of information to millions of American patients. Redesign of online content of websites that provide patient education material regarding anesthesia could be an important step in improving access to information for patients with poor health literacy.

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C075

Title: **The role of early childhood trauma in face-to-face versus telephone administered Cognitive Behavioral Therapy (CBT)**

Summary: Telephone Cognitive Behavior Therapy (t-CBT) is an established treatment for depression (Mohr, Ho, Duffecy, Reifler, Sokol, Burns, Jin, Siddique 2012). Traumatic experiences early in childhood may affect treatment outcomes and psychopathology (Weder & Kaufman, 2011). CBT has also demonstrated effectiveness as an intervention for symptom reduction in depressed individuals who have experienced trauma (Butler, Chapman, Forman, Beck, 2006); however few studies have found support for T-CBT for these individuals. Additionally, client and therapist alliance predicts treatment outcome in traumatized individuals receiving CBT (Ormhaug, Jensen, Wentzel-Larsen, Shirk, 2014).

Objective: The purpose of this study is to explore whether the presence of traumatic experiences affects patient depressive symptoms and therapeutic alliance in clients receiving CBT for depression by phone T-CBT or face FtF-CBT.

Sample: 325 participants diagnosed with Major Depressive Disorder were randomized to receive 18 sessions of T-CBT or FtF-CBT. One hundred and ninety-two of those participants reported a physical or sexual traumatic experience (physical trauma N=156, sexual trauma N=113).

Methods: Depression was measured at baseline and at week 18 (post treatment) using an objective, evaluator administered, Hamilton Rating Scale for Depression (Ham-D) and the self-report Patient Health Questionnaire-9 (PHQ-9). The Working Alliance Inventory (WAI), which measures the relationship between therapist and client, was administered at weeks 4 and 14. Trauma and abuse history were assessed at baseline (prior to treatment assignment).

Results: Caucasians reported physical trauma (26%) over sexual trauma (15%) compared to African Americans who reported physical trauma (13%) and sexual trauma (11%) relatively equally. Thirty-six percent of women experienced physical trauma and 32% reported sexual trauma, while 22% percent of women reported experiencing both physical and sexual trauma. Sexual trauma reported at baseline was significantly associated with differences in alliance at weeks 4 and 14 for individuals receiving FtF-CBT (p = .03). Physical and sexual traumatic experiences were significantly associated with increased depression scores from the Hamilton Rating Scale for Depression (HAM-D) at baseline (p = .01, p = .002, p = .02, p = .009, p = .0179).

The completed poster will present results from all available time points.

Conclusion: Preliminary analyses provide support for the hypothesis that exposure to traumatic events may affect therapeutic alliance for individuals receiving FtF-CBT and T-CBT and those traumatic experiences may be related to more severe depressive symptoms at baseline.

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Title: The Relationship Between Insomnia and Depression in a CBT Treatment for Major Depressive Disorder

Summary: Insomnia and depression have a complex, often bidirectional, relationship. Sleep disturbances are a common symptom of Major Depression Disorder (MDD). If left untreated, insomnia is a strong predictor of the development of new or recurrent episodes of depression. There is some evidence that treating insomnia can help improve the outcome of depression therapy. Thus it is important to explore the role of insomnia in the context of cognitive behavioral therapy (CBT) for depression, both in initial treatment outcomes as well as in MDD relapse.

Objective: The purpose of this study is to further understand the relationship between insomnia and depression by examining if CBT for depression effects insomnia and if insomnia is related to depression relapse.

Sample: 325 adult primary care patients diagnosed with MDD

Methods: Participants were randomized to receive either face-to-face CBT (F2F) or telephone delivered CBT (T-CBT). The F2F-CBT and T-CBT used the same CBT protocol, with treatment delivery medium being the only factor that varied between conditions. This treatment model has been adapted and validated for telephone administration. Participants received 18 45-min therapy sessions: two sessions weekly for the first 2 weeks, followed by 12 weekly sessions, with 2 final sessions over 4 weeks. All participants received a patient workbook covering CBT concepts, including behavioral activation, cognitive restructuring, and sleep hygiene. Depression and insomnia were measured at baseline, post treatment, six months and one-year post treatment using the self-report measures Patient Health Questionnaire-9 (PHQ9) and the Insomnia Severity Index (ISI).

Results: There were no statistically significant differences in total ISI scores across the T-CBT and F2F-CBT groups (p =.74). ISI scores did change with treatment within the total sample (p < .0001) but when controlling for PHQ9, the total ISI scores did not significantly differ (p = .18). Individuals with insomnia at baseline do not significantly differ from those without insomnia in response to depression treatment (p =.06). Those with insomnia at end of treatment had significantly higher PHQ9 scores at 6 months (p =.0007) and one year (p =.004) post treatment.

Conclusion: These findings show that while insomnia was not affected by medium of CBT treatment, treatment for depression did improve insomnia, even when treatment was not directly targeting insomnia. Insomnia at baseline did not impact treatment outcomes, with both groups showing improvement in depressive symptoms. However, those with insomnia at end of treatment did have higher depression scores post treatment, suggesting a greater vulnerability to depression relapse over time.

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C077

Title: A multi-transcript signature predicts the clinical outcome of older GBM patients

Summary: Currently there are no clinical methods to predict the survival of older (> 40 years) GBM patient. In this project we identified a transcript/ isoform expression signature that can predict GBM patient survival and developed an assay that has potential clinical application in the selection of high risk GBM patients for adjuvant and aggressive therapy.

Objective: Glioblastoma multiforme (GBM) is the most common and deadly primary brain tumor in older (> 40 years) population. Even with the current standard of care GBM patients exhibit poor prognosis and the response to therapy is highly variable. Though the presence of IDH1 mutation and G-CIMP methylation predicts a longer survival among GBM patients, these parameters are mostly observed in young patients (≤ 40 years). Currently there are no clinical methods to predict the survival of older (> 40 years) GBM patients and there is an urgent need to identify biomarkers for predicting the clinical outcome in these patients. In our earlier studies, we have observed that isoform level expression analysis captures the molecular differences among GBM patients better than a gene based approach. Hence, we sought to identify a transcript/isoform based signature that will be translated to a quantitative RT-PCR based assay to stratify GBM patients based on their survival probabilities.

Methods: We collected the exon array expression data for GBM patients (364 patients) and normal individuals (10 samples) from the TCGA cohort who were >40 years old at the time of diagnosis. We used the patient outcome and exon array data to perform an analysis on isoform-level expression to identify transcripts that are associated with survival. Following certain isoform filtering steps, we applied the Cox proportional hazard regression model to each transcript/ isoform and selected the top1200 isoforms associated with survival for consensus hierarchical clustering.

Results: We have identified 3 clusters that differ significantly in their prognosis and these will be referred as the high, medium, and low risk groups. Using feature selection and classification algorithms we have identified a set of transcripts/ isoforms whose expression can identify the risk group of a GBM patient. We have translated this model to a RT-PCR based assay that can successfully stratify GBM patients into three groups with statistically distinct survival. The model has been validated on the TCGA's GBM RNA-seq data cohort and an independent GBM patient cohort from University of Pennsylvania.

Conclusions: We have identified a transcript/ isoform expression signature that can predict GBM patient survival and developed an assay that has potential clinical application in the selection of high risk GBM patients for adjuvant and aggressive therapy.

C078

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Title: Wound complications and depression after obstetric anal sphincter injuries (OASIS); The FORCAST study: For Optimal Recovery, Care after Severe Tears

Summary: Severe tears during vaginal birth and postpartum depression have dire short and long-term complications for women. Determining the incidence of and risk factors for severe tears and postpartum depression in women who sustain OASIS will help guide future practices to decrease this potentially modifiable childbearing consequence.

Objective: To determine the incidence of and risk factors for wound complications and postpartum depression in women who sustain OASIS

Sample: 180 women with OASIS at Prentice Women's Hospital

Methods: We conducted a prospective cohort study of women who sustained OASIS during delivery of a full-term infant at a tertiary care institution between September 2011 and August 2013. Women were seen in the female pelvic medicine and reconstructive surgery clinic at 1, 2, 6, and 12 weeks postpartum, as well as annually, for perineal evaluation; the Patient Health Questionnaire (PHQ-9) as well as a visual analog scale (VAS) were also completed at each visit. Wound infection was defined by having ≥2 of the following on clinical examination: heat, erythema, edema, and/or purulent discharge. Depression was defined as a score ≥ 10 on the PHQ-9 (indicating moderate to severe depression) anytime during the patient's follow up period. VAS scores ranged from 0 (no pain) to 100 (maximum pain). We estimated adjusted relative risk measures of association between various demographic and clinical characteristics and wound complications and post-partum depression using modified Poisson regression multivariate modeling.

Results: 180 women with OASIS were enrolled during the study period. 87 percent of women were nulliparous. The mean age of patients was 32.4± 3.8 years, mean BMI 28.8± 4.2(kg/m^2). 10% of patients had chorioamnionitis, and 82.1% of patients had a third degree laceration. 72.0% of patients underwent an operative vaginal delivery (64.3% forceps and 7.7% vacuum). The overall risk was 18.3% for wound infection and 24.4% for wound breakdown. Fourth degree lacerations were more likely to become infected than third degree lacerations (28.6% versus 16.9%, $p<0.05$), but not more likely to result in wound breakdown (21.4% versus 25.0%). With multivariate analyses, no factor was significantly associated with wound infection. However, operative vaginal delivery was significantly associated with the development of wound breakdown (adjusted risk ratio = 3.07, 95% CI 1.08 – 8.7, p= 0.036). Women with wound infection and breakdown reported significantly more pain on the VAS than women with an intact perineum (23.0 [range 0-100] versus 35.0 [range 5-92], p=0.03). Sixteen (8.9%) patients developed depression during their postpartum follow up period. With multivariate analyses, subjects with fourth degree lacerations were significantly more likely to develop postpartum depression (adjusted relative risk = 4.59, 95% CI 1.39 – 15.20, p= 0.013). Operative vaginal delivery was also associated with the development of post-partum depression (adjusted relative risk = 2.92, 95% CI 0.55 - 15.38, p = 0.207), though this was not statistically significant.

Conclusions: OASIS is associated with high incidences of wound infection, breakdown and postpartum depression. Women with wound infection and breakdown also report significantly more pain. While operative vaginal delivery is associated with wound breakdown, fourth degree lacerations are associated with postpartum depression.

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C079

Title: Weight Loss and Changes in Calf Muscle Characteristics in Peripheral Artery Disease

Summary: Weight loss in older persons without peripheral artery disease (PAD) has been associated with loss of muscle mass and strength, which can contribute to decline in functional performance. We previously reported that overweight/obese people with PAD have greater functional impairment and faster functional decline than normal weight people with PAD. However, associations of weight loss with change in muscle characteristics and functioning in PAD populations have not been previously evaluated. Therefore, we studied the association of weight loss with muscle mass change and functional decline in people with PAD. We also assessed associations of intentional and unintentional weight loss with muscle mass change and functional decline in people with PAD. Our results are expected to inform clinicians and PAD patients about the potential consequences of weight loss for people with PAD.

Objective: We determined whether weight loss is associated with adverse changes in lower extremity muscle characteristics over time among people with PAD. We hypothesized that weight loss would be associated with more adverse changes in muscle over time compared with stable weight or weight gain.

Sample: Of the 742 WALCS II participants who completed baseline testing between May 2002 and May 2004., 463 were PAD participants and 279 were non-PAD participants. Participants were aged 59 years and older at baseline. Mean follow-up time was 38.8 months for the PAD group and 44.4 months for non-PAD.

Methods: Calf muscle characteristics were measured with computed tomography (CT) at baseline and at 2-year and 4-year follow-up. Knee extension isometric strength, knee extension power, and 6-minute walk distance were measured at baseline and annually. Weight change categories were weight loss (weight loss > 5 pounds), stable weight (weight change < 5 pounds), and weight gain (gained > 5 pounds). Analyses controlled for age, gender, race, baseline BMI, physical activity level, ankle-brachial index, comorbidities, and other covariates.

Results: Compared to stable weight and weight gain, weight loss was associated with greater decline in calf muscle area per year (loss: -395.3 mm^2; stable: -157.6 mm^2; gain: -16.04 mm^2; P < .0001 for trend), smaller increase in calf muscle percent fat per year (loss: +1.176%; stable: +1.707%; gain: +1.736%; P = .0137 for trend), greater decline in total calf area per year (loss: -456.5 mm^2; stable: -131.8 mm^2; gain: 52.153 mm^2; P < .0001 for trend), greater decline in isometric knee extension strength (loss: -17.94 N, stable: -6.121 N, gain: -3.673 N; P = 0.0002), and greater decline in knee extension power (loss: -5.402 W, stable: 1.630 W, gain: 2.493 W; P = 0.0003) in PAD participants. Similar trends were observed in participants without PAD. Weight loss after baseline was associated with less average annual decline in six minute walk test (loss: -48.52 ft, stable: -58.17 ft, gain: -103.0 ft; P = 0.0261) compared to stable weight and weight gain. Among PAD participants who lost weight, there were significant differences in both muscle and functional outcomes between people who had different exercise habits.

Conclusions: Among PAD participants, weight loss is associated with greater declines in calf muscle area, knee extension strength, and knee extension power over time. However, weight loss is associated with less increase in calf muscle percentage of fat and less decline in functional outcomes over time.

C080

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Title: Amphotericin B Nasal Spray Appears Effective in Preventing Breakthrough Fungal Infections in Colonized Hematopoetic Stem Cell Recipients.

Summary: Invasive fungal infections (IFI) are a major cause of morbidity and mortality during hematopoetic stem cell transplantation (HSCT). Fungal colonization of the upper airway passages occurs frequently in HSCT recipients and may serve as a portal of entry for serious invasive fungal infection, especially in patients who are immunocompromised. In order to decrease colonization and the development of IFI's during HSCT, a novel clinical practice was instituted at Northwestern Memorial Hospital to prophylactically administer amphotericin B deoxycholate nasal spray 0.5% (ABNS) in addition to standard oral antifungal prophylaxis to all HSCT recipients with fungal colonization of their nasal passages.

Objective: In our study, intranasal amphotericin b deoxycholate was administered to all hematopoetic stem cell recipients colonized with fungi within their nasal passages, with the objective of eliminating both nasal fungal colonization and the development of invasive fungal infections.

Results: Amongst 1945 stem cell recipients transplanted between 2005-13, 117 nasal fungal isolates were identified in 109 patients (5.1%). The spectrum of fungal cultures included fifty-six (47%) yeast and sixty-one (53%) mold isolates There were no significant differences in age, gender, diagnosis, conditioning regimen, transplant or donor type between patients with or without positive nasal fungal surveillance cultures Median days of ABNS administration was 11 days (range: 3-61). Twenty-three patients (14 autograft and 9 allograft) changed systemic antifungal therapy for febrile neutropenia (n=13), liver function abnormalities (n=6), or suspected IFI (n=4).
Follow-up fungal nasal surveillance cultures after initiation of ABNS were negative in all 109 previously colonized patients. Amongst the 109 HSCT recipients treated with ABNS, two (2%) possible breakthrough infections were identified, including, an autograft patient who developed a soft tissue mould infection and an allograft with possible *Candida glabrata* pneumonia. Both infections were successfully treated.
ABSN was not discontinued in any patient, and most patients received the majority of scheduled doses. Adverse effects which were identified during patient interviews included subjective complaints of stuffy nose and bad taste in the mouth and throat.

Conclusions: ABNS effectively eradicates nasal fungal colonization and is associated with very low rates of IFI in colonized HSCT recipients. Minimal adverse events and low cost makes this formulation an attractive method for preventing IFI. Future studies are needed to confirm these results.

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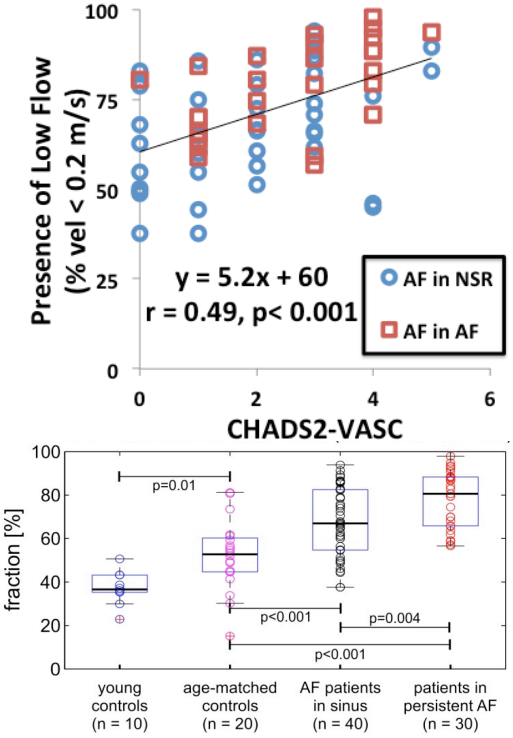
C081



TITLE: Left atrial blood stasis by 4D flow MRI correlates with stroke risk estimation by CHA_2DS_2-VASc score

SUMMARY: Clinical risk scores currently used to predict stroke risk in atrial fibrillation **(AF)** and guide decisions regarding anticoagulation have only mediocre predictive accuracy. Direct assessment of blood stasis, a key physiologic contributor to thrombus formation, may improve stroke risk estimation in AF. We used 4D flow MRI to measure 3D flow patterns in the left atrium **(LA)**. Stasis was more pronounced in AF patients than controls, and even worse in persistent AF. Stasis correlated with CHA_2DS_2-VASc score, but the modest correlation may be due to limitations in the risk score.

BACKGROUND: Stroke is the most serious complication of AF. Blood stasis is a key factor responsible for thrombus formation in the LA. Peak LA appendage flow velocity < 0.2 m/s is an independent risk factor for stroke in studies using transesophageal echocardiography. 4D Flow MRI may improve prediction of stroke risk in AF patients by examining 3D flow patterns across the entire LA volume over multiple phases spanning the cardiac cycle.

OBJECTIVE: We hypothesized that LA stasis measured by 4D flow MRI correlates with stroke risk estimated by the CHA_2DS_2- VASc clinical risk score in patients with AF.

METHODS: We performed 4D flow MRI in 10 young controls, 20 older controls, and 70 patients with documented AF - 40 were in sinus rhythm at the time of imaging (AF-sinus) and 30 were still in AF (AF-afib). Each subject underwent standard cardiac protocols including ECG and navigator gated free breathing 4D-Flow MRI. LA volume was manually segmented to enable analysis of all LA voxel velocities over multiple phases spanning the cardiac cycle. The top 50% of LA velocities were used for analysis. LA flow for each patient was quantified by mean LA velocity and the percentage of LA velocities < 0.2 m/s. CHA2DS2-VASc scores were calculated for each patient (1 point each for congestive heart failure, hypertension, age 65-75, diabetes, vascular disease or female gender; 2 points for prior stroke/thromboembolism, or age ≥ 75).

RESULTS: The older volunteers were similar in age to AF-sinus patients (59. 2 ± 7.4 vs 61.3 ± 11.1, p = .45) but younger than AF-afib patients (59. 2 ± 7.4 vs 66.5 ± 10.4, p = 0.01). The percentage of voxels with low flow velocities (< 0.2 m/s) was significantly different between groups: young controls < older controls < AF-sinus < AF-afib (box plots). CHA2DS2-VASc correlated with LA mean velocity (r = -0.48, p < 0.001) and percentage of LA velocities < 0.2 m/s (r = 0.49, p < 0.001). Correlation was higher for AF-afib (p = 0.57) than AF-sinus (p = 0.40).

CONCLUSIONS: When compared to controls, LA flow measured by 4D Flow MRI is impaired in AF-sinus and in AF-afib. Increased LA blood stasis as measured by 4D flow MRI correlates with higher stroke risk as estimated by the CHA_2DS_2-VASc clinical risk score. Patients with higher CHA_2DS_2-VASc score have lower LA mean velocity and a higher percentage of LA velocities < 0.2 m/s. That the correlation was modest may be due to limitations in the CHA_2DS_2-VASc score – which uses epidemiologic risk factors to estimate stroke risk rather than a physiologic parameter such as blood stasis. Further work will help determine whether 4D Flow MRI can more accurately identify AF patients at increased stroke risk, and guide decisions on anticoagulation.

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C082

Title: Unrecognized Allergic Rhinoconjunctivitis and Allergic Sensitization among Latino Youth (GALA II Study)

Summary: Allergic rhinitis affects 30% of adults and 40% of children in US (Khan DA, et al. JACI 2008). Unfortunately allergic rhinoconjunctivitis (ARC) can be unrecognized and may impair school performance and overall quality of life for children. Moreover, undiagnosed allergic disease among Latinos is not well-described (Zeldin et al. Am. J. Epidemiol. 2011). Therefore we investigated ARC frequency in reportedly healthy Latino children.

Objective: To characterize frequency of undiagnosed atopy and allergic rhinoconjunctivitis (ARC) among Latino youth.

Methods: Latino children aged 8-21 years were recruited as non-allergic control and asthmatic subjects from five cities in the mainland United States (US) and Puerto Rico for the GALA II Study (2008-2011). Controls denied physician diagnosis of ARC at screening before undergoing a study visit when we administered an extensive questionnaire and performed skin prick test (SPT to 14 aeroallergens) and venipuncture. We used logistic regression to identify variables associated with atopy and ARC, adjusting for sex, age, socioeconomic status, ethnicity, recruitment site, highest parental education level and subject smoking history.

Results: Of 1552 control subjects (mean$\pm$SD age = 13.9$\pm$3.6 years, 43% males), 50% were of Mexican descent, 30% Puerto Rican, and 20% other Latino ethnicity. Atopy based on $\geq$1 positive SPT was present in 48% of subjects (n=743) and unrecognized ARC in 13% (n=202), based on atopy plus questionnaire report of nasocular symptoms in the absence of colds or flu. Sensitization to indoor allergens predominated and testing for 7 allergens identified >95% of atopic subjects. Mexicans were more often atopic than Puerto Ricans (51% vs. 38%, $p<0.0005$), but fewer reported rhinoconjunctivitis (18% vs. 42%, $p<0.0005$). Logistic regression showed that atopy was associated with male gender (odds ratio [OR] =1.59; 95% confidence interval [1.23-2.04]), city living (OR=1.58[1.02-2.46]), living in mainland US (OR=2.49[1.94-3.19]), and in the Northeast region (OR=2.87[1.85-4.44]).

Conclusions: Atopy and allergic rhinoconjunctivitis were common in Latino children reportedly healthy. Unrecognized ARC might affect child quality of life or school performance.

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C083

Title: Nonoperative Management of Symptomatic Cholelithiasis in Pregnancy is Associated with Frequent Antepartum and Early Postpartum Hospitalizations

Summary: Symptomatic gallstone disease during pregnancy is a leading cause of non-obstetric hospitalizations and operations. Although laparoscopic cholecystectomy (LC) is safe and efficacious in pregnancy, practice patterns are variable with nonoperative management favored by some providers.

Objective: The aim of this study was to evaluate practice patterns and outcomes of pregnant patients undergoing nonoperative management for symptomatic cholelithiasis (SC).

Methods: We performed a retrospective analysis of all patients who presented to a tertiary care academic center over a 42-month period (Jan 2009-July 2012). Women (age 18 or older) with uncomplicated SC during pregnancy (without cholecystitis, pancreatitis, choledocholithiasis, or cholangitis) were included. Patients were identified by querying an electronic data repository for relevant diagnoses, imaging, and procedure codes. Patients were also contacted via a standardized telephone survey to supplement the chart review and account for outside hospitalizations and treatments.

Results: A total of 53 women (mean age 32.4y, SD 6.7) with SC were identified during the study period. Mean gestational age at initial presentation was 23 weeks (9 patients in first, 22 in second, and 22 in third trimester). Four women (7.5%) underwent LC in the antepartum period, all in the second trimester. There were no maternal or fetal complications associated with LC.

Forty-nine women (92.5%) had initial non-operative management. Of these women, 18 (36.7%) were hospitalized more than once in the antepartum period (range 0-5 hospitalizations). Postpartum LC was performed in 28 women (57.1%), the majority (n=21) within 3 months postpartum. Of women who underwent postpartum LC, 22 (78.6%) had recurrent symptoms postpartum prior to LC, and 14 (50.0%) were readmitted at least once (median 1, range 1-4) postpartum for SC prior to undergoing LC.

In the remaining 21 women who never underwent LC (42.9%), long-term follow-up information was available in 15 (six could not be reached for telephone survey). Seven elected to not undergo LC due to absence of postpartum symptoms. Four patients had ongoing symptoms but had not undergone LC (one due to recurrent pregnancy). A single patient died from postpartum bleeding complications. Three women had other co-morbid medical conditions, and a decision to defer surgery was made in the postpartum period in conjunction with their providers.

Conclusions: A minority of pregnant patients with SC undergo antepartum LC. In the remaining patients, many have multiple antepartum admissions for SC. Furthermore, in those who undergo LC, half do so only after postpartum admission for SC. Given the safety of antepartum LC, early surgical intervention during pregnancy may be the optimal strategy to reduce antepartum and early postpartum admissions.

C084

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Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: [ALTERED MICROBIOME IN CHRONIC PELVIC PAIN PATIENTS**]**
Summary: [Chronic pelvic pain afflicts millions of patients in the U.S., yet underlying disease mechanisms remain unclear. We recently reported that *E. coli* strains exhibit diverse pain phenotypes in a murine urinary tract infection model that were subject to modulation via the GI tract, including a chronic pelvic pain phenotype reminiscent of interstitial cystitis/bladder pain syndrome (IC).]

Objective:[Thus, we hypothesized that flora of the GI and/or reproductive tracts modulate IC symptoms.]

Sample: [The NIDDK-sponsored Multi-Disciplinary Approaches to Chronic Pelvic Pain Network (MAPP) is a comprehensive effort to characterize IC and other chronic pelvic pain syndromes. Female IC patients and controls were recruited into this study from individuals already participating in MAPP at Northwestern University for analyses of fecal and vaginal flora (age 22-60; n=7 IC patients, 8 healthy controls).]

Methods: [Stool and vaginal swabs from the introitus, mid-vagina, and posterior fornix were obtained and processed according to the Human Microbiome Project Manual of Procedures. Purified DNA samples were subjected to 16S rDNA sequence and metagenome sequence analyses.]

Results:[Preliminary data analyses demonstrated clustering of IC patients that was distinct from controls and non-overlapping. Most OTUs were significantly reduced in IC patients, relative to controls, but a subset of OTUs was elevated.]

Conclusions: [These preliminary studies suggest that chronic pelvic pain is associated with an altered microbiome in IC patients. Moreover, specific taxa may modulate IC symptoms.]

(In order to be considered for inclusion in the 2014 Research Day program, **ALL** abstracts must be in Arial, 11 pt font, and must fit one page. Any abstract exceeding criteria will be sent back for revision. Thank you.)

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C085

Title: Meaningful Use of Electronic Health Records Among Rural Community Mental Health Agencies

Summary: The adoption of electronic health record systems (EHRs) have the potential to improve the quality of behavioral healthcare through more complete and faster retrieval of medication documentation, improved medication management, reduced medical error and cost, and increased patients' participation in their own care. This study provides an assessment of EHR adoption rates and meaningful use status (as determined by DHHS national EHR guidelines) among rural community mental health agencies (CMHAs) in southern Illinois.

Sample: Twelve CMHAs in Southern Illinois were surveyed. Of the 14,000 unduplicated patients served by these agencies annually, 70% receive Medicaid, 30% have no means to pay for services, and nearly all have incomes well below the federal poverty line. The surveyed CMHAs provide a variety of services including individual counseling, group therapy, medication, psychiatrists' services, day treatment, client run peer groups, case management, and supportive services (employment and housing).

Methods: The chief operating officers or the chief technology officer from the 12 CMHAs completed an online questionnaire about EHR meaningful use. The survey included questions in four categories 1) EHR functions available to staff, 2) stage of meaningful use, 3) communication with other health care providers, and 4) EHR system development and costs. Univariate statistics were used to analyze the data.

Results: Ninety percent of surveyed CMHAs used some type of EHR system for appointment scheduling, electronic billing, recording services provided, and recording clinician notes. Fifty percent of surveyed CMHAs used EHRs to record psychiatrist notes, patient medication lists, and discharge information. Ten percent of respondents used EHRs to exchange patient clinical summaries with other providers, exchange secure messages with patients, and order prescriptions. No providers used EHRs for providing reminders for guideline-based interventions or screening tests.

Conclusions: While the majority of responding CMHAs used EHRs to collect and store basic clinical information (DHHS Stage 1 Meaningful Use Criteria), less than 10% of CMHAs in southern Illinois have reached DHHS-specified Stage 2 of EHR Meaningful Use. CMHAs identified several barriers to implementing EHR systems that could improve meaningful use, including cost, lack of adequate IT staff, concerns about inappropriate disclosure of patient information, and uncertainty about the return on investment from a more advanced HER system.

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C086

Title: ULTRASOUND-GUIDED TRIGEMINAL NERVE BLOCK VIA THE PTERYGOPALATINE FOSSA: AN EFFECTIVE TREATMENT FOR TRIGEMINAL NEURALGIA AND ATYPICAL FACIAL PAIN

Summary: Trigeminal neuralgia (TN) is the most common cause of facial pain with a reported incidence of 5 per 100,000 patients per year.[1] The International Association for the Study of Pain defines trigeminal neuralgia as sudden, usually unilateral, severe, brief, stabbing, recurrent episodes of pain in the distribution of the of the trigeminal nerve primarily involving the maxillary (V2) and mandibular branch (V3).[2] The American Academy of Neurology recommends pharmacological treatment as first line of therapy. Although pharmacologic management is effective in about seventy-five percent of patients, twenty-five percent of patients do not achieve effective relief or experience intolerable side effects and may require additional interventions including injection local anesthetic, steroids or glycerol, Gamma-Knife radiation, or a surgical intervention such as a microvascular decompression.[3] Blockade of the Gasserian ganglion or its branches is frequently performed as a diagnostic or therapeutic tool in the management of TN. We present a case series of 15 patients who have undergone 43 successful diagnostic and/or therapeutic ultrasound-guided injections of local anesthetic and steroids in the pterygopalatine fossa.

Objective: To present the immediate and long-term efficacy of ultrasound-guided injections of local anesthetic and steroids in the pterygopalatine fossa in patients with unilateral facial pain that failed pharmacological and surgical interventions.

Methods: The study was approved by the Northwestern IRB. The patients were placed in the lateral decubitus position and standard ASA monitors were applied. A 8-15 MHz linear ultrasound probe was positioned on the lateral face below the zygomatic arch. The zygomatic bone, the lateral pterygoid muscle, the lateral pterygoid plate as well as the maxillary bone were visualized. The maxillary artery was identified in the pterygopalatine fossa. Using a 22 g echogenic needle, the needle was advanced in plane from lateral to medial toward the pterogopalatine fossa. The injectate was deposited deep to the lateral pterygoid muscle and plate and lateral to the maxillary artery. A total of 5mL of local anesthetic (Bupivacaine 0.25%) and steroid were injected.

Results: Fifteen patients were treated with ultrasound-guided trigeminal nerve block with local anesthetic and steroids placed into the pterygopalatine fossa. All patients achieved complete sensory analgesia to pin prick in the distribution of the V2 branch of the trigeminal nerve and 80% (12 out of 15) achieved complete sensory analgesia in V1, V2, V3 distribution within 15 minutes of the injection. All patients reported pain relief within 5 minutes of the injection. The majority of patients maintained pain relief throughout the 15 month study period. No patients experienced symptoms of local anesthetic toxicity or onset of new neurological sequelae.

Conclusions: We conclude that the use of ultrasound guidance for injectate delivery in the pterygopalatine fossa is a simple, free of radiation or magnetization, safe, and effective percutaneous procedure that provides sustained pain relief in trigeminal neuralgia or atypical facial pain patients who have failed previous medical interventions.

References: 1. Manzoni, G., Torelli P. Neurological Sciences. 2005: 26(2) pp. 65-7.
2. Van Kleef M, van Genderen WE, Narouze S, et al. Trigeminal neuralgia. Pain Practice. 2009;9:252-9.
3. Chua et al. (2011) Acta Neurochir 153:763–771.

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C087

Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Minimally invasive aortic valve replacement (mini-AVR) is associated with excellent outcomes without increased cost

Summary: Minimally invasive valve replacement has been established as a safe alternative for surgeons and patients who wish to avoid full sternotomy. Mini-AVR has been consistently associated with longer aortic cross clamp (AxC) and cardiopulmonary bypass (CBP) despite similar outcomes. In addition to increased perfusion time, specialized cannulae needed for mini-AVR are significantly more expensive than traditional equipment, adding increased cost. The financial impact of the minimally invasive approach has not been well established.

Objective: To determine if outcomes for aortic valve replacement through an upper midline hemi-sternotomy are similar to aortic valve replacement through a full midline sternotomy and if the minimally invasive technique incurs increased cost.

Methods: Propensity score analysis was used to retrospectively compare isolated, elective mini-AVR to conventional, full sternotomy AVR at a single academic medical center. Intraoperative and post-operative outcomes and associated financial data were compared between intention-to-treat groups.

Results: Overall mortality was less than 2%. Aortic cross clamp and cardiopulmonary bypass times were significantly increased for the mini-AVR group. There was no difference in mortality or major complications between minimally invasive and conventional groups. Average valve implant size was not different for mini-AVR. Financial analysis demonstrated that mini-AVR is cost-neutral compared to full sternotomy AVR.

Conclusions: Despite longer AxC and CBP times for the more technically challenging mini-AVR, there was no difference in mortality, major morbidity or cost. Our findings suggest that minimally invasive aortic valve replacement offers a safe alternative to full sternotomy AVR without challenging financial resources.

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C088

Title: [Meshed Acellular Dermal Matrix in Primary Breast Reconstruction]

Summary: In the context of tissue expander/implant breast reconstruction, meshing is a novel technique by which acellular dermal matrix (ADM) is perforated. The resultant expansion and imparted pliability allow for concurrent increases in cost effectiveness and intraoperative ease, as well as possible aesthetic benefits and seroma reduction.

Objective: To review the indications, benefits, and limitations of meshed ADM in breast reconstructive surgery.

Methods: The indications for use, meshing technique, intraoperative technique, and aesthetic and surgical outcomes of meshed ADM are identified.

Results: The senior authors utilize meshed ADM when a breast reconstruction patient requires a larger graft than the standard, or more than one graft. Their second-stage reconstruction cases have shown that meshed ADM does not act differently than unmeshed ADM.

Conclusions: Use of meshed ADM is currently evolving as a viable and potentially beneficial option in primary breast reconstruction. Within ADM-assisted prosthetic breast reconstruction literature, there is currently a paucity of long-term outcomes data on meshed ADM. Future studies will elucidate such data on this relatively new technique.

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C089

Title: BMI as a Predictor of Complications in Open vs Minimally Invasive Partial Nephrectomy

Summary: Obesity continues to be a problem in the United States and there are conflicting findings regarding whether or not obesity is a predictor of complications in open partial nephrectomy (OPN) and minimally invasive partial nephrectomy (MIPN). Few studies on this topic have been multi-institutional and most have had small sample sizes. We sought to improve upon these limitations using a multi-institutional database that could offer a larger patient population for analysis.

Objective: Our objective was to determine whether increasing BMI predicts an increase in postoperative complications in OPN or MIPN.

Sample: We reviewed the ACS-NSQIP 2005-2012 database for all patients undergoing a partial nephrectomy (50240) or a minimally invasive partial nephrectomy (50543). 1667 open partial nephrectomy and 2020 minimally invasive partial nephrectomy patients were obtained.

Methods: All patients were stratified into six classes according to the WHO guidelines for BMI: underweight (<18.5), normal weight (18.5-25), overweight (25-30), obese class 1 (30-35), 2 (35-40), and 3 (>40). The underweight class was excluded from analysis. Patients receiving procedures in addition to their principal procedure (OPN or MIPN) were also excluded so that patients received an OPN or MIPN and no additional procedure. Outcomes were surgical complications, medical complications, and overall complications. A bivariate screen was conducted and those preoperative variables with $\geq$10 event occurrences and p-value$\leq$0.20 were included in the multivariate regression. Chi-square analyses compared complication rates across all obesity classes and a multivariate logistic regression was conducted to determine whether obesity was a predictor of overall complications in either procedure type.

Results: Of a sample of 3687 patients, 1667 (45.2%) patients underwent OPN and 2020 (54.8%) patients underwent MIPN. There were no differences in overall, surgical or medical complications among weight class groups for OPN or MIPN patients. Additionally, multivariate regression did not find obesity class to be a significant predictor of increased complications. Instead, for OPN, age (OR=1.021, p=<0.001), operation time (OR=1.008, p=<0.001), bleeding disorders (OR=4.163, p=<0.001) and ASA class (OR=1.387, p=0.029) were significant predictors of post-operative complications while for MIPN, dyspnea (OR=1.951, p=0.010), operation time (OR=1.007, p=<0.001), and ASA class (OR=1.586, p=0.022) were significant predictors.

Conclusion: Obesity may not be a contraindication for open or laparoscopic partial nephrectomy.

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C090

Title: Utilization and Outcomes of Lung Protective Ventilation

SUMMARY: Lung protective ventilation (LPV) has been shown to improve outcomes, including mortality, in patients with Acute Respiratory Distress Syndrome (ARDS). However, LPV remains poorly implemented in clinical practice. Additionally, while utilization studies have included data from both academic- and community-based hospitals, there has yet to be a study that compares utilization between these two settings. This is concerning because the majority of ARDS patients are treated at community hospitals, which are at risk for low rates of implementation due to less access to intensivists.

OBJECTIVE: The goal of this study is to compare LPV implementation rates at both academic- and community-based institutions as part of a larger project aimed at improving the implementation of evidence-based ventilation strategies in critically ill patients through systems-based intervention. Here we present initial results from the academic medical center.

METHODS: We conducted a retrospective cohort study at an urban academic medical center. All patients who were admitted to the ICU and intubated were screened for inclusion. Patients were included in the study if they met the Berlin Definition for ARDS. Patients were excluded if they were transferred between study sites or had a tracheostomy prior to ICU admission. LPV was defined as tidal volume ≤6.5 cc/kg and plateau pressure < 30 cm H20; patients were considered to have been treated with LPV if their ventilator settings met these criteria at any point during intubation. The primary outcomes were a) whether the subject received LPV and b) the length of time from diagnosis to implementation of LPV.

RESULTS: 442 patients were admitted to the ICU and screened for inclusion. 21 patients (4.7%) met the definition of ARDS and were included in the study. During intubation the lowest achieved tidal volumes were as follows: 3 patients (14%) received <6.5 cc/kg, 3 patients (14%) received ≤7 cc/kg, 7 patients (33%) received ≤8 cc/kg, and 8 (38%) received >8 cc/kg. Of the three patients that received LPV, one received LPV on the day of diagnosis, one on day 6, and one on day 8. There were 5 (24%) patient deaths – 4 in the ICU and 1 after discharge to palliative care. Of the subjects receiving LPV, only one subject died, representing the one death after ICU discharge.

CONCLUSIONS: LPV is poorly implemented at this academic medical center. This raises concern for ARDS patients being treated at community-based hospitals due to lack of access to practitioners with critical care training.

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C092

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Is there a relationship between increased surgical duration and urinary tract infections?

Summary: While multiple preoperative conditions, such as inpatient stay, renal failure, and pre-operative transfusions, have been recognized to independently predict UTI [1], there is a paucity of data assessing the impact of increased surgical duration on the incidence of urinary tract infection (UTI). The objective of the study was to assess and quantify the relationship between surgical duration and the incidence of UTI across surgical disciplines.

Methods: Retrospective cohort study from the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP) from 2005-2012 including 1.5 million surgical patients from over 400 participating institutions across the nation. Patients reported with non-general anesthesia, an unspecified duration of anesthesia, or were reported to have preoperative sepsis were excluded. Patients underwent primary surgical procedure at a participating NSQIP hospital and were tracked for 30 days post-operatively. The rates of urinary tract infection (UTI) for hourly increments in surgical time, defined in the 2012 ACS NSQIP User Guide as duration of anesthesia, was analyzed. Patient demographics and comorbidities were assessed. Subgroup analyses examined the relationship between UTI rates and surgical duration across nine specialties, within the most common procedures, and between inpatient and outpatient status. Multiple logistic regression modeling was employed to determine whether surgical duration is a potential independent predictor of UTI development.

Results: 22,486 patients experienced a UTI for an overall rate of 1.50%. Within specialties, UTI was highest for gynecological and urological surgery (2.90%) and lowest for otolaryngology/ENT (0.2%). Regression analysis, in the absence of subgroup stratification, revealed a progressively greater risk of UTI with increasing surgical time. For UTI, the odds ratio ranged from .950 (.867 – 1.-401) after the first hour, 1.207 (1.099-1.326) after the third hour to 2.116 (1.916-2.336) after the sixth hour. An odds ratio of 1.129 was associated with each increase in standard deviation of surgical time above the mean. This finding was substantiated with several subgroup analyses, stratifying by specialty and surgical complexity. Findings were significant in all surgical specialties except in the fields of plastics and otolaryngology (ENT). For the most common procedures, an hourly increase in surgical time was associated with an odds ratio ranging from 1.127 to 1.197.

Conclusion and Relevance: The incidence of UTI rises with increasing surgical duration, when controlling for surgical complexity, procedure, and specialty. Limitations include NSQIP's 30-day follow-up period and its lack of data on medical centers. Given the recent policy changes in Medicare reimbursement for nosocomial infections, this study will inform decision-making for policymakers and medical care teams and improve UTI risk stratification models.

1. Trickey, A.W., et al., *Using NSQIP to Investigate SCIP Deficiencies in Surgical Patients With a High Risk of Developing Hospital-Associated Urinary Tract Infections.* Am J Med Qual, 2013.

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C093

Title: Assertiveness behaviors and depression outcome in an RCT comparing face-to-face and telephone-administered CBT.

Summary: Depression is a societal concern with 1-year prevalence rates for major depressive disorder estimated at between 6.6% and 10.3% in the general population. Innovations in telecommunications have increased the potential for such support by expanding the range of accessible social networks. However, it has been suggested that telecommunications technologies may inadvertently thwart interpersonal skill development by occluding nonverbal expressions that are activated during face-to-face interaction, and consequently impede ability to behave in an assertive manner, especially when conflicts occur. Researchers have begun leveraging such technologies to overcome access barriers to treating depression. One such modality, telephone-administered cognitive-behavioral therapy (T-CBT), is gaining prominence as an evidence-based therapy for depression.

Objective: The purpose of this secondary analysis is to examine the impact of treatment modality on interpersonal skill development, specifically assertive behavior, and to determine if changes in the frequency of performing assertive behaviors and the tension experienced are related to reductions in depression severity.

Sample: Three-hundred and twenty-five primary care patients meeting criteria for Major Depressive Disorder were randomly assigned to receive 18 sessions of face-to-face CBT (FtF; n = 162) or telephone-administered CBT (T-CBT; n = 163).

Methods: Assertiveness frequency and tension using the Scale for Interpersonal Behavior (SIB) were measured at pre-treatment, in-treatment (weeks 9 and 18), and post-treatment (weeks 42 and 66). The SIB is a 46-item metric of assertiveness which contains four subscales, and measures both the likelihood of engaging in assertive behavior (assertiveness frequency), and the psychological distress that is experienced upon engaging in such behavior (assertiveness tension). In the present study, six items from the SIB were employed to measure negative assertions. Repeated measurements of depression severity were also taken during the same time points using an objective evaluator-administered Hamilton Rating Scale for Depression (HAM-D), and self-reported Patient Health Questionnaire (PHQ-9). Analyses using mixed linear models were used to examine the impact of treatment modality on patient assertiveness, and the main effect of treatment week on assertiveness and depression severity scores. Treatment delivery medium was the only varying factor between the two groups.

Results: Results revealed a relationship between assertiveness tension and depression severity insofar as reductions in assertiveness tension were related to reductions in depression severity (PHQ-9, $t = 4.97$, $p<.0001$, and HAM-D, $t = 3.76$, $p =.0002$). However, this relationship did not vary by treatment modality (ps > .05). Assertiveness frequency was not significantly related to depression severity, $p>.05$. Additionally, depression severity diminished more rapidly than did assertiveness tension during treatment with $F(4, 323) = 2.42$, $p>.05$.

Conclusion: The results of the present study indicate that participants experienced reductions in both depression severity and psychological distress associated with performing assertive behaviors over the course of treatment, with depression severity decreasing more rapidly than assertiveness tension. This pattern was expressed similarly across the two treatment delivery mediums examined. Assertiveness frequency was unrelated to depression severity. These findings suggest that changes in the frequency of performance and distress experienced while engaging in assertive behaviors proceed along similar trajectories in FtF and T-CBT.

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C094

Title: Speckle Tracking Echocardiography in Cardiac Sarcoidosis

Background: Cardiac involvement of sarcoidosis can occur in 20% of patients with systemic sarcoidosis and is associated with poor outcomes. Early treatment to improve morbidity and mortality is desirable, but sensitive and accurate assessment of cardiac involvement can be challenging. Speckle tracking (ST) echocardiography has emerged as a valuable tool for sensitive assessment of myocardial function and subclinical left ventricular dysfunction.

Objective: We assessed the use of ST to identify patients with cardiac sarcoidosis (CS).

Methods: 18 patients with identified CS and 16 patients with extra-cardiac sarcoidosis (ECS) were identified by a search of the Northwestern Medicine Enterprise Data Warehouse and retrospective chart review. Strain imaging was performed on EchoInsight® on apical 4-, 2-, 3-chamber as well as short axis echocardiogram clips by 2 independent cardiologists. Baseline characteristics and strain rates were compared between the two groups with a student's t-test.

Results: The mean age of patients with CS was 54 ± 12 years old compared with patients with ECS who were slightly older, 61 ± 8 years old. Patients with CS and ECS had similar ejection fraction ($p=0.17$). Few patients had diabetes or coronary artery disease. Strain analysis demonstrated significantly reduced global longitudinal strain in the patients with CS compared with ECS (-13.2 ± 6% vs. -17.4 ± 6%, $p<0.05$). Global circumferential strain was also significantly reduced in patients with CS compared with ECS (-19.8 ± 4% vs. -25.8 ± 4%, $p<0.05$). The results are displayed in Table 1. A parametric display of the averaged strain rates for each segment in CS and ECS patients is shown in Figure 1.

Conclusions: ST echocardiography revealed impaired global longitudinal strain and global circumferential strain in patients with CS compared with ECS. Therefore, deformation imaging may be a valuable adjunct tool for screening of cardiac involvement in patients with systemic sarcoidosis to identify those at high risk for life-threatening arrhythmias and heart failure.

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C095

Title: THE EFFECTS OF PERINEURAL VERSUS INTRAVENOUS DEXAMETHASONE ON SCIATIC NERVE BLOCKADE OUTCOMES: A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY

Summary: Perineural dexamethasone has been investigated as an adjuvant for brachial plexus nerve blocks,[1] but it is not known whether the beneficial effect of perineural dexamethasone on analgesia duration leads to a better quality of surgical recovery. We hypothesized that patients receiving dexamethasone would have a better quality of recovery than patients not receiving dexamethasone. We also sought to compare the effect of perineural with that of IV dexamethasone on block characteristics.

Methods: The study was approved by the Northwestern IRB and registered on ClinicalTrials.gov, NCT 01616173. An investigational new drug exemption (PIND #114062) was granted by the Food and Drug Administration. Patients undergoing elective ankle and foot surgery were recruited over a 9-month period. Patients received ultrasound-guided sciatic nerve blocks by using 0.5% bupivacaine with epinephrine 1:300,000 (0.45 mL/kg) and were randomized into 3 groups: group 1 = Perineural dexamethasone 8 mg/2 mL with 50 mL IV normal saline, group 2 = perineural saline/2 mL with IV 8 mg dexamethasone in 50 mL normal saline, and group 3 = perineural saline/2 mL with 50 mL normal saline. The primary outcome was the global score in the quality of recovery (QoR-40). The secondary outcomes included analgesia duration, opioid consumption, patient satisfaction, numeric pain rating scores, and postoperative neurologic symptoms.

Results: Eighty patients were randomized, and 78 patients completed the study protocol. There was no improvement in the global QoR-40 score at 24 hours between the perineural dexamethasone and saline, median (97.5% CI) difference of −3 (−7 to 3); IV dexamethasone and saline, median difference of −1 (−8 to 5); or perineural dexamethasone and IV dexamethasone median difference of −2 (−6 to 5). Analgesia duration ($P < 0.001$) and time to first toe movement ($P < 0.001$) were prolonged by perineural dexamethasone compared with saline. IV dexamethasone prolonged time to first toe movement compared with saline ($P = 0.008$) but not analgesia duration ($P = 0.18$). There was no significant difference in the time to first toe movement or analgesia duration between the perineural and IV dexamethasone groups. Postoperative opioid consumption was not different among study groups. Self-reported neurologic symptoms at 24 hours were not different among perinueral dexamethasone (17, 63%), IV dexamethasone (10, 42%), or normal saline (8, 30%) ($P = 0.31$). All postoperative neurologic sequelae were resolved by 8 weeks.

Conclusions: Preoperative administration of IV and perineural dexamethasone compared with saline did not improve overall QoR-40 or decrease opioid consumption but did prolong analgesic duration in patients undergoing elective foot and ankle surgery and receiving sciatic nerve block. Given the lack of clinical benefit and the concern of dexamethasone neurotoxicity as demonstrated in animal studies, the practice of perineural dexamethasone administration needs to be further evaluated.

References: 1. Cummings KC 3rd, Napierkowski DE, Parra-Sanchez I, Kurz A, at el. Br J Anaesth 2011;107:446–53.

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C096

Title: Achieving Better Medication Management in the ECMH Setting through Quality Improvement

Introduction:
Medication usage and safety continues to be a major challenge for patients and providers in achieving clinical outcomes, especially in the low resource primary care setting.[1] Poorly controlled chronic conditions have a large cost financially to our society and medically to patients. Underserved populations suffer from complications of their chronic diseases disproportionately. The Education-Centered Medical Home (ECMH) at Northwestern University Feinberg School of Medicine (FSM) places medical students into primary care clinics organized around the Patient Centered Medical Home (PCMH) model; one of the overarching principles for both student education and patient care as part of the ECMH program is quality improvement (QI). This research reports the results of one clinic's QI endeavor to improve patient medication usage and safety using the *define, measure, assess, improve, control* (DMAIC) methodology.

Methods:
Baseline data on medication reconciliation and adherence was collected by student physicians at the clinic. During the intervention period, patients were called the day of their appointments and reminded to bring the pill bottles for all medications they were taking. During their visit, patients received an in depth medication reconciliation by either the medical students or the in house pharmacist. Each of these markers was recorded on a master list at the end of each clinic day to assess for behavior change on the part of both the care team and patients. Collected data was then analyzed using descriptive statistics to evaluate changes in placement of phone calls, patient adherence to bringing pill bottles, and completion of medication reconciliation.

Results:
Ongoing. Baseline data (patient who brought pill bottles, phone calls made, medication reconciliations performed) before intervention was 0 (0%) for all patients seen 8 weeks before clinic based on chart abstraction. Preliminary results for a total of 42 patients who were to attend clinic show 23 patients (50%) were successfully called before clinic. Of that number 10 (23%) patients brought in their pill bottles. Of those patients that were not reached by phone before clinic, only 1 (2%) patient brought their pill bottles. Of those patients that attended clinic, 20 (47%) had a medication reconciliation performed with 50% of these being performed by the in house pharmacist.

Conclusions:
A student led QI project can be successful in identifying gaps in current care, improving patient familiarity with medication regimens, and improving the care team's consistency and delivery of meaningful medication reconciliation. Given the importance of adequate medication usage and safety for achieving clinical goals, better managing chronic conditions, and thereby reducing health care expenditures, facilitating the development of methods to improve are essential. Moreover, having students participate and lead these QI endeavors will strengthen medical education by allowing future physicians to develop the QI skills they will use to improve future patient care.

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C097

Abstract should include the following subheads as appropriate: Title, Summary, Objective, Sample, Methods, Results, Conclusions. Limit one page. Formatting follows:

Title: Qsymia Induced Bilateral Acute Angle-Closure Glaucoma

Background: Obesity has reached epidemic proportions with about one third of North American considered to be obese. Qsymia, a combination of phentermine and extended release topiramate, was approved by the FDA in 2012 making it one of the first weight loss medications approved since fenfluramine/phentermine.

Case Report: A 38 year-old obese female presented to the emergency department with bilateral blurry vision for one day. In addition, she reported bilateral eye pain, and flashes of light. She denied headaches, nausea, vomiting, or eye trauma. She had been taking Qsymia for seven days as a weight loss aid. She had normal vitals and basic labs. Her eye exam demonstrated bilateral conjunctival injection, pupils 4mm and reactive, visual acuity 20/200 OD and 20/100 OS, intact extra-ocular movements, and normal retinas and ocular nerves on fundoscopic exam. She was found to have bilateral acute angle closure glaucoma (BAACG) with intraocular pressures (IOP) of 48 mmHg OU. She was treated with brominodine, metoprolol, mannitol, solumedrol, and homatropine. Her IOP improved to 21 mmHg OS and 22 mmHg OD prior to discharge 24 hours later.

Case Discussion: Our patient experienced BAACG secondary to her use of once daily Qsymia, which contains 3.75mg of phentermine and 23mg of topiramate. While BAACG has been described in relation to topiramate in the ophthalmology literature, to our knowledge, it has not been described for Qysmia or in the toxicology literature. The mechanism of the development of BAACG is hypothesized to be a uveal effusion leading to anterior displacement of the lens-iris diaphragm, resulting in miopization and reduction of anterior chamber depth. Phentermine has not been reported to cause BAACG.

Conclusion: This case report highlights the potential of a new FDA approved weight loss medication Qsymia to cause bilateral acute angle-closure glaucoma.

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C098

Title: Improving Communication in the Pediatric Intensive Care Unit (PICU): The Use of a Navigator

Summary: Current research demonstrates communication deficiencies in the Pediatric Intensive Care Unit (PICU). The goal of this research is to use experiential data from PICU stakeholders to better understand communication challenges in the PICU and to obtain feedback from PICU stakeholders about the use of an intervention in the PICU to support decision making and communication. PICU stakeholders included healthcare team members who care for PICU patients. Our proposed intervention uses a navigator to support communication and decision making. This is the first of a two part project. From the results of this part (part one) we will refine our intervention and then test the intervention in the clinical setting.

Objective: The purpose of this study is to understand the current state of communication in the PICU between the healthcare team and patients and their families, and to develop the potential role of a navigator to support PICU communication and decision making.

Sample: Fifty-two healthcare providers at Lurie Children's participated in 8 separate focus groups. The sample consisted of social workers, chaplains, advanced nurse practitioners, nurses, physicians, and multidisciplinary staff.

Methods: We recruited healthcare team members caring for PICU patients by contacting eligible participants via email, phone, at regularly scheduled divisional meetings, or in person at the hospital. The focus groups were organized by healthcare specialty of the participants. Eight, one-hour focus groups were conducted, audio recorded, and transcribed. Participants were asked to discuss their views of the current strengths and weaknesses of communication in the PICU, how the presence of a navigator could support these strengths and weaknesses, and what tasks the navigator should be charged with in order to enhance communication efforts. Transcripts were analyzed for relevant themes using a grounded theory approach.

Results: Healthcare team members identified weaknesses, limitations, and gaps within the current communication patterns in the PICU. Four communication patterns emerged from group discussions: 1) communication between non-PICU healthcare team members and PICU healthcare team members; 2) communication among PICU healthcare team members; 3) communication between physician and non-physician team members; 4) communication between healthcare team members and families. Healthcare team members discussed supportive intervention to improve communication such as: the use of a navigator to organize communication within the healthcare team and provide guidance and emotional support to the families; and the use of supplementary tools to aid communication efforts, such as a "communication log" or goals calendar.

Conclusions: These data demonstrate a clear need to improve PICU communication and suggest that interventions to address limitations in the identified communication patterns may be beneficial. Participants agreed that a navigator could be employed to support families and help communication among healthcare team members and between parents and healthcare team members.

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C099

Title: [Insurance Status Does Not Impact Outcomes after Breast Reconstruction: An Analysis of Propensity-Matched TOPS Data]

Summary: An increasing volume of literature suggests that Medicaid and Medicare insurance independently confer an increased risk of complications following a variety of surgical procedures. However, the effect of payer status on breast reconstruction outcomes has not been previously examined.

Objective: We utilized the Tracking Outcomes in Plastic Surgery (TOPS) registry to study the impact of insurance type on medical and surgical complications following breast reconstruction.

Sample: The TOPS database was queried to identify all patients who underwent breast reconstruction between 2008 and 2011. Cases were identified using primary Current Procedural Terminology (CPT) codes 19340 and 19357 for implant/expander reconstructions and 19361, 19364, 19367, 19368, and 19369 for autologous reconstructions. In anticipation of propensity matching, patients with incomplete data were excluded from the analysis. Of the 16,003 cases initially identified, 5056 patients remained after application of inclusion criteria.

Methods: We performed a retrospective analysis of patients in the TOPS database who underwent breast reconstruction between 2008 and 2011. The primary preoperative variable assessed was insurance status. Outcomes assessed included seroma, hematoma, post-operative bleeding, surgical site infection, wound dehiscence, graft or flap failure, reoperation, explanation, and a number of medical complications. In order to control for potential confounding variables, Medicare or Medicaid patients were propensity score matched to a private insurance control. The propensity score for each patient was constructed using multivariate logistic regression with insurance type as the binomial dependent variable and all other covariates of interest [age, BMI, race, diabetes, smoking status, ASA class, inpatient/outpatient designation and procedure type] as predictor variables. Pearson's chi-squared test, Fischer's exact test or Student's t-tests were used to analyze unmatched data, while matched data were compared using a paired t-test, Wilcoxon signed rank test, or McNemar's, as appropriate.

Results: Propensity score matching identified 165 well-matched pairs from the Medicaid group and 233 from the Medicare group for analysis. Outcomes did not differ between private and Medicaid patients with respect to surgical site infection (3.0% vs. 5.5%, p=0.28), seroma (6.7% vs. 6.1%, p=0.82), hematoma (3.0 vs. 1.2%, p=0.49), wound dehiscence (12.1% vs. 7.8%, p=0.20), or reoperation (9.1% vs. 7.3%, p=0.55). Similarly, outcomes for private and Medicare patients did not differ with respect to surgical site infection (3.4% vs. 5.2%, p=0.36), seroma (4.7% vs. 4.3%, p=0.82), hematoma (2.2 vs. 1.7%, p=1.0), wound dehiscence (6.9 vs. 4.3%, p=0.23) or reoperation (7.3% vs. 6.9%, p=0.86). Medicaid patients did have a significantly higher rate of graft or flap failure compared to private patients (6.0% vs. 1.2%, p=0.04). The overall rate of medical complications was very low and did not differ between cohorts.

Conclusions: Our study is the first to investigate the effect of payer status on outcomes of breast reconstruction. In contrast to other surgical specialties, our results demonstrate that Medicaid and Medicare status do not independently predict inferior outcomes in breast reconstruction when compared to privately insured patients. This finding reinforces the commitment of the plastic surgery community to providing optimal care for breast reconstruction patients, irrespective of insurance status.

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C100

Title: EFFECTS OF STELLATE GANGLION BLOCK ON VASOMOTOR SYMPTOMS: A RANDOMIZED SHAM-CONTROLLED CLINICAL TRIAL IN POSTMENOPAUSAL WOMEN

Summary: Hot flashes and night sweats (i.e., vasomotor symptoms, VMS) affect 80% of women as they transition through menopause. The severity of VMS is high for women who undergo surgical menopause or early menopause due to treatments for breast cancer. Hormone therapy (HT) is the most effective treatment for VMS. Many women, however, seek non-hormonal therapies for VMS due to safety concerns and personal preference. Antidepressants, gabapentin and clonidine are effective non-HT for reducing VMS, but their use is limited because of modest symptom improvement and undesirable side effects. Botanical therapies show relative inefficacy, and lifestyle interventions are marginally more effective than placebo in relieving VMS. Uncontrolled intervention studies, including studies involving breast cancer survivors, have demonstrated improvements in VMS following stellate ganglion blockade (SGB) with local anesthetic. This study presents the first randomized, sham-controlled trial of SGB for the treatment of VMS.
Methods: The Institutional Review Boards at Northwestern University & University of Illinois at Chicago approved this study (clinicaltrials.gov:NCT00992914). Forty women aged 30 to 70 years with moderate-to-severe VMS and natural or surgical menopause. The design was a randomized, sham-controlled trial comparing the effect of SGB versus sham injection on the frequency of total and moderate-to-severe VMS as measured by daily diaries. Patients and evaluators were blinded for the entire study period. Image-guided SGB was performed with 5 mL bupivacaine 0.5%; sham injection of 5 mL saline was performed in the subcutaneous tissue in the neck. VMS were recorded at baseline and for six months after the procedure. The primary outcome was the frequency of total and moderate-to-very severe VMS as measured by daily diaries. Participants rated each hot flash as “mild”, “moderate”, “severe” or “very severe.” The intent-to-treat (ITT) analyses for all primary and secondary outcomes were analyzed using a series of mixed-effects regressions (random intercept only).
Results: There were no group differences in baseline demographic characteristics, VMS symptoms, or menopausal symptoms. The mean (SD) daily frequency of total subjective VMS at baseline was 9±85 (8±58), with 63% rated as moderate-to-very severe. There were no differences in overall VMS frequency. However, in the ITT analysis of moderate-to-very severe VMS, SGB-treated women showed significantly greater reductions (52%) from baseline to months 4-6 compared to the sham-control group (4%). Vasomotor Symptom Intensity (Frequency x Severity) decreased in the SGB group as compared to the sham control group. There were no adverse events reported.
Conclusions: We identified a 52% reduction in moderate-to-very-severe VMS in women who underwent SGB, with duration of effect that lasted the entire 6 month follow-up. Though the sham control group demonstrated modest placebo effect as expected, this effect was diminished after 3 months. Though the hypothalamus has long been considered to be the central thermoregulatory center (CTC), functional MRI studies have confirmed that the brain stem is activated immediately before a hot flash whereas activity in the insula only rises after the experience of the hot flash. Blood flow changes to CTC regions of the brain could decrease VMS. Alternatively, SGB may modulate nerve growth factor and norepinephrine, which increases centrally before and during a hot flash. SGB may provide an effective treatment for VMS in women who seek non-hormonal therapies due to safety concerns and personal preference.

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C101

Title: Assessing a robotic measure of loss of independent joint control in chronic stroke

Purpose/Hypothesis. Previous studies have used reaching range of motion (work area) as an outcome measure for evaluating the effectiveness of reaching interventions for patients post-stroke, but have yet to determine the minimal detectable change (MDC) not attributable to error for these measures. The purpose of this study is to determine the MDC for the two robotic reaching metrics of maximal reaching distance and peak reaching velocity during ballistic reaching under standardized abduction loads in order to account for the effect of loss of independent joint control on reaching performance in stroke. Determination of MDCs will support the future use of these metrics in clinical trials and are expected to be within 10% of the group mean due to their quantitative nature.
Number of Subjects. Eleven individuals with chronic stroke scoring between 2-4 out of 7 on the Arm Chedoke-McMaster Stroke Assessment (CMSA) participated in this study.
Material/Methods. Maximum voluntary torque (MVT) for shoulder abduction was measured using a handheld dynamometer. Maximum reaching distance and velocity were then measured for both arms using the ACT^{3D} robot for six loading conditions—sliding on a horizontal haptic surface and then supported at 0%, 12.5%, 25%, 37.5%, and 50% of abduction MVT. Participants reached as fast as possible to a standardized outward target (see picture of feedback). Participants were retested 3-14 days later. The MDC was calculated at a 95% confidence interval using the following equations:

(1) $MDC = 1.96 \times \sqrt{2} \times SEM$, (2) $SEM = SD_{1,2} \times \sqrt{(1 - ICC_{2,2})}$

where SEM is the standard error of measurement, SD is the combined standard deviation of sessions one and two, and $ICC_{2,2}$ is the intraclass correlation coefficient.
Results. For maximum reaching velocity of the more affected arm, the MDC ranged from 0.11 m/s to 0.31 m/s representing 14-34% of the group mean peak velocities. For maximum reaching distance of the more affected arm, the MDC ranged from 0.13 to 0.21 of normalized reaching distance representing 17-32% of the group mean maximum reaching distances. MDCs for the unaffected arm were 23-60% of the group mean peak velocities and 7-16% of the group mean maximum reaching distances.
Conclusions. MDCs for the affected arm were ~20% of the respective group means suggesting higher variances than expected in this study. The study was limited by the small sample size. Additionally, it may be most appropriate to calculate the MDC for individuals at each stage of recovery as determined by the CMSA. The wide range of impairment included in this study increased data variance and therefore increased the MDCs. However, previous work targeting the loss of independent joint control reported a >20% increase in reaching range of motion, a closely related metric, suggesting a real improvement considering the results of this investigation.
Clinical Relevance. Future clinical trials require MDCs to interpret the magnitude of response to investigational interventions. Furthermore, this study presents a reduced and more efficient method of quantitatively evaluating the effect of loss of independent joint control on reaching performance in stroke.

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C102

Title: The Impact of Advancing Age on Postoperative Outcomes in Plastic Surgery

Summary: Age has been found to be an independent risk factor for post-operative complications in general surgery patients. In contrast, the overall effect of age on the incidence of postoperative complication for patients undergoing plastic surgery has yet to be quantified. In addition, previous studies evaluating the effect of age on postoperative complications in specific plastic surgery procedures have not distinguished morbidity according to surgical or medical complications. This distinction is important since it can lead to development of specific preventive strategies to minimize complications in elderly patients undergoing plastic surgery.

Objective: The main objective of the current investigation was to quantify the effect of age on overall postoperative complications in plastic surgical patients. We also sought to examine if age was an independent predictor for the development of surgical or medical complications.

Sample: 9,999 patients underwent plastic surgery from NSQIP 2005 to 2012.

Methods: The National Quality Surgical Improvement Program (NSQIP) from 2005 to 2012 was retrospectively reviewed for all patients undergoing plastic surgery. Patients who were ≥60y and categorized under the surgical specialty of plastic surgery in NSQIP were selected for analysis. The primary outcome of interest was 30-day overall complication rates. In order to control for potential confounders (preoperative and intraoperative characteristics) multivariate regression models were constructed.

Results: The incidence of unadjusted overall complications increased with age with an overall complication rate of 11.5% in patients 60-69 years, 12.7% in patients 70-79 years, and 15.8% in patients 80 or more years ($p< 0.001$).After adjusting for potential confounders age was not independently associated with an increase in overall complications, OR(95%CI) of 1.05 (0.86 to 1.27) but patients older than 80 years had more medical complications, OR(95%CI) of 1.51(1.02 to 2.29) , P =0.039.

Conclusions: Age is not independently associated with overall worse outcomes in patients undergoing plastic surgery. Medical complications were more likely in extremes of age (>80 years).Age alone should not be included as a decisional factor in patients < 80 years old considering plastic surgery.

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C103

Title: Effect of BMI on outcomes in patients undergoing Allogeneic Hematopoietic Stem cell transplant.

Summary: Higher BMI has been linked with comorbid conditions and poor response to chemotherapy. This has been associated with variable outcome after stem cell transplant.

Objective:

To evaluate the effect of BMI on outcomes after undergoing Allogeneic stem cell transplant.

Sample: All patients who underwent an allogeneic HSCT at Northwestern Memorial Hospital from 2007 to 2013 were included. All patients with a BMI over 18.5 were included. (N =462)

Methods: A retrospective chart review was designed. Socio demographic factors like age, race, gender, donor gender have been included. Disease factors like Performance index, disease status at transplant, donor CMV status, recipient CMV status, conditioning regimen (myeloablative or not), cell dosage and comorbid conditions like diabetes, CAD and hypertension were included. Patients were classified into 3 different groups based on BMI – normal (18.5 to 24.99), overweight (25-29.99) and Obese (>30) and survival analysis was done.

Results: The median patient age at the time of transplant was 53.The patient diagnosis included MDS/Leukemia (67 %) , Lymphoma (21 %) , Multiple Myeloma (9 %) ,myelofibrosis (1.5 %) and non malignant hematological (3.46). The 2-year Overall survival was 54 %, 60 and 60 % for normal, overweight and obese groups. (p= 0.64) The corresponding Non Relapse Mortality at 2 years was 30 % , 20 % and 28 % (p =0.17). Further subgroup analysis (myeloablative or not, remission status) was also done which also showed no significant difference in the overall survival.

Conclusions: We found no predictive value of BMI to determine overall survival or non-relapse mortality at 2 years. High BMI cannot be considered a parameter to deny stem cell transplant in patients. It should however be addressed pre transplant to reduce post transplant complications like infection and GVHD.

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C104

Title: Sex Hormones as Major Determinants of Surface ECG J-Point Height in Healthy Volunteers

Summary: J-point elevation is associated with increased sudden cardiac death risk and is more prevalent in men than women. We hypothesized that sex hormones are major determinants of J-point amplitude (JPA) in a healthy population without heart disease.

Methods:
ECGs were obtained from 475 healthy multiethnic volunteers (268 males age 32±10 years; 207 females age 34±8 years). Blood samples were obtained and analyzed for estrone, estradiol, dihydrotestosterone, total testosterone (T), and calculated free T levels. After stratifying by sex, multiple linear regression was used to determine if age, BMI, and hormone levels are independent predictors of maximum JPA in lateral, anterior, and inferior leads, respectively.

Results:
JPA was higher ($p<0.0001$) in men vs women in the inferior (92 ± 69 vs 64 ± 58 μV), anterior (104 ± 53 vs 49 ± 33 μV), and lateral (97 ± 65 vs 65 ± 48 μV) leads. JPA in the inferior leads was negatively associated with age ($\beta=-1.1$, $p<0.04$) and BMI ($\beta=-4.5$, $p<0.0009$) in men; and negatively associated with BMI ($\beta=-1.9$, $p<0.04$) in women. JPA in the anterior leads was negatively associated with age ($\beta=-0.9$, $p<0.04$) and BMI ($\beta=-3.2$, $p<0.0009$) in men; and negatively associated with BMI ($\beta=-1.9$, $p<0.04$) and positively associated with total T ($\beta=0.5$, $p<0.02$) in women. JPA in the lateral leads was negatively associated with BMI ($\beta=-3.4$, $p<0.005$) and positively associated with free T ($\beta=0.013$, $p<0.03$) only in men.

Conclusions: In a population of healthy volunteers without heart disease, age, BMI, and sex hormones were shown to be associated with JPA. Differences in BMI and sex hormones

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C105

Title: Evaluating Characteristics of Long-term Survivors in Glioblastoma

Introduction:
Despite advances in therapeutic approaches, Glioblastoma multiforme (GBM) remains a devastating disease with a dismal prognosis. Only 5% of patients with this disease survive 3 or more years following diagnosis. Although improved overall survival (OS) has been associated with younger age, higher initial Karnofsky Performance Status (KPS), complete surgical resection, MGMT promoter methylation and IDH positivity, no common trait amongst LTS has been identified.

Methods:
In an effort to better understand underlying characteristics that may contribute to long-term survivorship, we examined 267 primary, supratentorial GBMs. We separated this total cohort into LTS, (OS ≥ 3 years (N= 38)) and short-term survivors (STS) (OS < 500 days (N=157)). We evaluated gender, tumor location, tumor size on MRI, the presence or absence of a cystic component at diagnosis, extent of resection, KPS, size of necrotic core, and patient age. In a subset of patients for which 2 pre-treatment MRIs 5 days or more apart were available (n=87), we utilized a mathematical modeling approach to determine if velocity of growth, rate of tumor cell invasion “D” and rate of proliferation “ρ” influence long-term survivorship.

Results:
Consistent with previous studies, common characteristics of LTS include younger age at diagnosis, higher KPS, and more extensive resections. Interestingly, we found a higher frequency of cystic gliomas amongst LTS. Although D was not significant across all tumor locations, it was a significant predictor of LTS for tumors located in the Parietal lobe (p=0.007). In non-parietal tumors, there was no significance of D in differentiating LTS from STS (p=0.93). Considering LTS vs. STS in the context of the entire 267 patient GBM cohort, we found that age, KPS, cyst vs. no cyst, and D are statistically significant in predicting survival (Cox Proportional-Hazards Model, Univariate). Interestingly, adding whether location is in the parietal lobe vs. all other locations to these other variables significantly improves the CoxPH model (log likelihood ratio statistic p=0.0219). If D is not incorporated, parietal location does not affect the model (p=0.161), signifying that tumor growth kinetics are essential in determining the effect tumor location may have on OS.

Conclusion:
This analysis is one of the largest studies to date of imaging characteristics and clinical features in LTS of GBM, and the first to include growth variables of proliferation, invasion and velocity. Our findings recapitulate previously identified attributes of LTS as well as demonstrate that cystic changes on pre-treatment MRI may also portend for long term survival. While we did not uncover a common characteristic amongst LTS, incorporating individual growth kinetics and tumor location did improve predictions about who is likely to be a long-term survivor and offers a novel quantity for further investigation.

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C106

Title: Clinical and Virologic Outcomes of BK Virus Nephropathy (BKVN) Treated with Cidofovir

Summary: Current guidelines recommend treating BKVN in the kidney transplant population with reduction of immunosupression. When BK virus replication continues, antiviral drugs, including cidofovir, leflunomide, and quinolone antibiotics may be considered. In this study, we assessed the virologic and clinical outcomes of 85 kidney transplant patients induced with alemtuzumab diagnosed with BKVN and treated with cidofovir. Cidofovir treatment was associated with a slow viral clearance and 23% graft failure rate at 1 year.

Objectives: (1) To define the antiviral strategies used to treat BK virus infection in kidney transplant patients at our transplant center, (2) to quantify the effect of cidofovir on serial quantitative BK virus load in kidney transplant recipients with BKVN, and (3) to evaluate the clinical outcomes of patients treated with cidofovir for BKVN.

Sample/Methods: After IRB approval, a retrospective electronic chart review of all kidney transplant patients (1/1/07 – 2/28/13) that developed BKVN at Northwestern Memorial Hospital was conducted. Data collected included medication received, patient/graft survival, serial creatinine levels, and plasma & urine quantitative PCR viral loads for BK virus. Basic descriptive statistics were calculated.

Results: 85 patients with BKVN after kidney transplantation were identified. When replication continued after reduction of immunosuppression, antiviral therapy was used in most patients, at the discretion of the patients' primary nephrologist. Following reduction in immunosuppression, cidofovir was used alone in 53% of patients, leflunimide was used alone in 4% of patients, fluoroquinolones were used alone in 2% of patients, and 16% of patients received multiple treatments. A quarter of the patients were treated with immunosuppression alone. Treatment with cidofovir was associated with a 48% rate of clearance of viremia. Average duration of treatment with cidofovir until clearance, for those who cleared viremia, was 15 ± 13 wks. Average creatinine change was +1.21 ± 3.53 mg/dL at 12 mos following diagnosis. Patient survival was 100%, 98% and 92% while graft survival was 100%, 93% and 77% at 1, 3 and 12 mos following diagnosis, respectively.

Conclusion: Cidofovir is associated with slow viral clearance and a 23% rate of graft failure at 12 months in this population. Cidofovir therapy was associated with clearance rates similar to prior studies, although graft failure was higher. Future studies are needed to optimize the management of BKVN among kidney transplant recipients induced with alemtuzumab.

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C107

Title: Estimating Tissue Differentiated Glioma Invasion from Clinical Scans

Introduction:
Computational models of glioblastoma multiforme (GBM) have proven to be accurate predictors of tumor growth and response to therapy in individual patients. Utilizing net rates of proliferation (ρ) and invasion (D) derived from clinical scans, the biological aggressiveness of a proliferation-invasion (PI) model can be quantified to characterize patient-specific tumor growth dynamics. A proliferation-invasion-hypoxia-necrosis-angiogenesis (PIHNA) model provides characterized GBM evolution by partitioning the malignant tumor cells into subpopulations based on histology. The PIHNA model provides insight into the biological interplay of metabolic changes that take place between cell populations.

Although previous modeling techniques have provided insight into GBMs in the PI and PIHNA models, calibrating these models from tissue-specific progression in-vivo will produce even more accurate models predicting progression in patients.

Methods:
Patient-specific invasion and proliferation parameters are derived from registered volumetric measurements of routine, clinical MRI scans. Surfaces representing the T1Gd and T2 anomaly are created from multiple time points from simulation results and patient scans. Using a distance metric between these surfaces at different time points, a progression velocity is attained. With the proliferation parameter assumed to be constant, the invasion parameter is derived from known relations. The derived invasion parameter, over the surfaces, is examined within the context of the tissue, grey or white matter, it is progressing through. Using the derived, tissue-specific invasion for simulation data as a benchmark, estimates for patient data are calculated.

Results:
Preliminary analysis of simulation and patient data support estimates of glioma invasion rates in white matter. Furthermore, rates of apparent grey matter glioma invasion are also reproduced from simulation data. Also, rates of invasion are observed to drop to zero close to the boundaries of the brain. However, estimating rates of grey matter invasion from measurements of clinical scans runs into a complication. This complication arises from lack of sufficient time between pretreatment clinical scans, up to ten days, to accurately resolve growth in grey matter with respect to derived parameters.

Conclusions:
Although this preliminary analysis confirms the differences in white matter and grey matter invasion, deriving grey matter invasion from patient data requires further study or additional techniques. These techniques may include using volumetric estimates of grey matter invasion or examining tumors in grey matter. However, the success of this technique in white matter may resolve the directional rates of invasion along mylenated axons.

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C108

Title: Maintenance of cortical thickness in SuperAgers: A key to preserved cognition in advanced age?

Summary: The Cognitive Neurology & Alzheimer's Disease Center at Northwestern University had identified a unique cohort of elderly individuals who maintain superior levels of episodic memory performance in advanced age called "SuperAgers". Previous results indicate that SuperAgers have less cortical atrophy than their cognitively-average peers. The present study looked at whether, like episodic memory, cortical integrity is maintained in these individuals over time and found no significant differences in cortical thickness or volume over an 18-month interval. Maintenance of cortical integrity may contribute to the preservation of cognitive abilities in these unique elderly individuals.

Objective: The Cognitive Neurology & Alzheimer's Disease Center at Northwestern University has identified a cohort of cognitive "SuperAgers," octo- and nonagenerians who perform as well as individuals 20 to 30 years their junior on a test of episodic memory and at least average for their age on tests of attention, language, and executive functioning. Previous neuroimaging results suggest that SuperAgers have less cortical atrophy than their cognitively-average same age peers and display no atrophy compared to average individuals in their 50s and 60s at a single time point. Longitudinal neuropsychological data suggest that SuperAgers are able to maintain their superior memory performance over 18 months. The current study examines the maintenance of cortical integrity of SuperAgers over this 18-month interval.

Sample: Longitudinal data from nine SuperAgers was utilized for this pilot study. SuperAgers are individuals over age 80 who score at least in the average range for 50-60 year olds on a test of episodic memory and who have at least average performance for their age on the Boston Naming Test, categorical fluency, and digit span tests.

Methods: Longitudinal structural neuroimaging data were processed using the automated FreeSurfer pipeline (http://surfer.nmr.mgh.harvard.edu, Version 5.1.0). All images were visually inspected and manually corrected for errors as necessary. Normalized whole brain cortical volume, average whole brain cortical thickness, and cortical thickness by hemisphere (right and left) analyses were conducted via paired t-tests to determine if there was significant change over time.

Results: No significant differences in whole brain cortical volume, average cortical thickness, or cortical thickness by hemisphere were found between baseline and 18 month scans (all p's > 0.05).

Conclusions: SuperAgers did not show significant cortical atrophy over an 18-month period, suggesting that maintenance of cortical volume and thickness may contribute to their uniquely preserved cognitive abilities in advanced age.

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Title: Nipple Aspiration Fluid Yielders and Non-Yielders: Genetic Characteristics

Ali Shidfar, Jun Wang, Subhashini Allu, Denise Scholtens, Robert Chatterton, Seema Khan

Summary: ABCC11 genotype distribution is significantly different between NAF yielders and non-yielders (P=0.00163). However, genotype distribution was not significantly different for PRLR (rs37364), PRL (rs2244502) and PRL (rs849872).

Objective: Nipple aspiration fluid (NAF) is a noninvasively acquired biosample that can provide a window of observation into the breast environment, but NAF yield is variable across studies, and is related to a variety of demographic and reproductive factors. Recently, we have observed a positive correlation between serum prolactin level and NAF yield status. The genetic traits determining NAF yield are unknown, but data from the 1970s linked wet type ear wax to NAF yield, and recent studies point to single nucleotide polymorphisms (SNPs) in the ABCC11 gene as a determinant of earwax type. Further, prolactin and prolactin receptor SNPs are related to serum prolactin level. We have investigated associations between NAF yield and SNPs in prolactin, prolactin receptor and ABCC11 genes in a recently completed case-control study.

Sample: NAF and/or blood were collected from 916 women. Subjects were defined as yielder if NAF volume was equal or more than 2µL and non-yielder if it was less than 2µL. According to this definition, our subjects categorized as 557 yielders and 359 non-yielders.

Method: DNA was extracted from blood using Qiagen kit and 20 ng of DNA was used to amplify and genotype for ABCC11 (rs17822931), PRLR (rs37364), PRL (rs2244502), PRL (rs849872) SNPs using Taqman genotyping assay on an Applied Biosystems 7900HT machine.

Results: The median age of Yielders and Non-yielders was 51 and 54, respectively, with the same range of 31-70 for both groups (P<0.0001). There were 209(38%) premenopausal, 257(46%) postmenopausal and 81(15%) perimenopausal of yielders vs. 99(28%) premenopausal, 229(64%) postmenopausal and 26(7%) perimenopausal of non-yielders (P<0.0001). ABCC11(rs17822931) allele frequency was 437(81%) CC, 5(1%) TT and 99(18%) CT in yielders and 269 (75%) CC, 16(4%) TT and 72(20%) CT in non-yielders. ABCC11 genotype distribution was significantly different between yielders and non-yielders (P=0.00163). PRLR (rs37364) allele frequency was 89(16%) GG, 272(50%)TT and 187(34%) GT in Yielders and 43(12%) GG, 181(50%) TT and 135(38%) GT in Non-yielders. PRL(rs2244502) allele frequency was 73(14%) AA, 233(43%) TT and 233(43%) AT in Yielders and 32(9%) AA, 155(43%) TT and 171(48%) AT in Non-yielders. PRL(rs849872) allele frequency was 17(3%) CC, 332(61%) TT and 194(36%) CT in Yielders and 11(3%) CC, 244(68%) TT and 104(29%) CT in Non-yielders. The difference was not statistically significant for PRLR (rs37364), PRL (rs2244502) and PRL (rs849872)

Conclusion: Our analysis demonstrates a correlation between ABCC11 (rs17822931) SNP and NAF yield status, with the major homozygous CC allele associated with NAF yielder and minor homozygous TT allele associated with non-yielder status. If NAF-based risk biomarkers are to be developed, a better understanding of the genetics of NAF yield is required.

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C110

Title: Associations between sleep improvements and cardiovascular risk in older adults with insomnia participating in non-pharmacologic interventions

OBJECTIVE: Insomnia with short sleep duration has been associated with hypertension and cardiovascular disease. The goal of this study was to test the effects of sleep hygiene education combined with two non-pharmacologic treatments: aerobic exercise versus non-physical activity on actigraphically measured sleep and markers of cardiovascular risk among older adults with insomnia.

METHODS: Seventeen older adults (16 women) with primary insomnia and sleep duration $\leq$ 6.5 hours received one session of sleep hygiene education and were randomized to 16 weeks of aerobic exercise or non-physical activities. Objective sleep variables were estimated using wrist actigraphy and sleep diaries. Subjective questionnaires included the Pittsburgh Sleep Quality Index (PSQI) and the Epworth Sleepiness Scale (ESS). Fitness was measured using treadmill exercise testing. Markers of cardiovascular risk included C-reactive protein (CRP), and BMI.

RESULTS: Both groups demonstrated significant increases in sleep duration and later sleep offset times. However, only the exercise group demonstrated an increase in sleep efficiency and subjective sleep quality. Improvement in sleep efficiency was associated with reductions in CRP. Improvement in self-reported sleep quality was associated with reductions in BMI.

CONCLUSIONS: Both aerobic exercise and non-physical activity were associated with increased sleep duration in older adults with insomnia and short sleep duration. Participants who had greater improvements in sleep quality had greater improvement in factors that contribute to cardiovascular risk, including weight and inflammation.

SUPPORT: P01 AG11412, M01 RR00048, UL1RR025741, K23 HL091508, T32AG020506, 1K23HL109110.

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C111

Title

Statin Use and Aneurysm Risk in Patients with Bicuspid Aortic Valve Disease

Summary

Bicuspid aortic valve (BAV) is the most common congenital cardiac anomaly, affecting 1-2% of the population. More than 50% of patients with BAV develop aortic dilatation, placing them at an 8-12 fold increased risk of aortic dissection compared to the general population and thereby warranting prophylactic aortic surgery. Previous studies have indicated that statin therapy might be associated with limited ascending aortic dilatation and aneurysm formation in BAV patients.

Objective

We seek to determine the association between preoperative statin use and ascending aortic dilatation among BAV patients referred for surgery.

Methods

We included all patients with BAV who underwent aortic valve +/- aortic surgery between April 2004 and December 31 2012 at our center. Use of statins and antihypertensive medications, and history of aortic stenosis or insufficiency was captured in our registry. In BAV patients undergoing aortic valve replacement for severe aortic stenosis or insufficiency, current ACC/AHA guidelines state that aneurysm repair is indicated if the ascending aorta exceeds 4.5 cm. Based on the aortic diameter (AD) defined as the maximum ascending aortic dimension on either echo, CT or MRI, patients were divided into two groups: AD < 4.5 cm or ≥ 4.5 cm. The association between preoperative statin use and aortic dilatation was assessed using logistic regression modeling with stepwise variable selection.

Results

Our study included 565 patients, of whom 326 (58%) had AD < 4.5 cm (mean age 59 ± 14 years, 70% male, 43% on statins), while 239 (42%) had AD ≥ 4.5 cm (mean age 54 ± 13 years, 84% male, 26% on statins) at the time of surgery. After adjusting for preoperative body surface area, beta blocker use, diuretic use and aortic stenosis, patients with AD ≥ 4.5 cm had 0.51 times lower odds (95% CI 0.34 – 0.75) of being on preoperative statins compared to those with AD < 4.5 cm (p=0.001).

Conclusion

In BAV patients who are referred for surgery, preoperative statin use is associated with a lower odds of ascending aortic dilatation. While further studies are needed to clarify the role of statins in BAV disease, our findings are intriguing and suggest that statins may play a protective role by limiting aortic dilatation in patients with BAV.

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C112

Title: Communication skill and employment stability in competitive jobs after traumatic brain injury.

Summary: One of the most important predictors of quality of life after traumatic brain injury (TBI) is competitive employment. It is also used as a criteria for successful rehabilitation after TBI. Many studies have examined associations of post-injury employment in TBI with neuropsychological measures, but few studies have examined associations of communication function with employment after TBI.

Objectives: The purpose of this research was to determine a relationship between employment outcomes and communication skills in persons with TBI.

Sample: Thirty-one participants with TBI participated in this study. Participants ranged in age from 25-64 (*M*= 47.73, SD: 10.92), had an average time-post-onset of 11.5 years (range: 1.2-30.2), and a duration of post-traumatic amnesia (PTA) of 34.4 days (range: 1-168). Participants with TBI were employed in mid-level jobs requiring 2 years of training (defined by the U.S. Department of Labor as “Job Zone 3” occupations) before their injury and attempted to return to Job Zone 3 occupations after their injury. All participants reported being cleared for return to work by a physician or neuropsychologist. Participants were divided into *stable* employment and *unstable* employment groups. There were no statistical differences for age, sex, PTA, or education. Stable employment was defined as maintaining employment for greater than one year while unstable employment was defined as unable to maintain employment for 12 consecutive months.

Methods: We selected relevant communication measures based on findings from qualitative interviews of persons without neurological involvement employed in Job Zone 3 occupations. Measures were: 1) Woodcock-Johnson III Tests of Achievement (WJ-III) – Understanding Directions, 2) The SCAN – 3A, 3) The Wechsler Memory Scales III – Logical Memory, 4)The Nelson-Denney Reading Test (NDRT), 5)The Functional Assessment of Verbal Reasoning and Executive Strategies (FAVRES), 6) The Modified Six Elements Test, 7) The Video Social Inference Test (VSIT), and 8) A voicemail elicitation task (VET) used to assess verbal pragmatic expression.

Logistic regression was used to determine if measures were associated with employment outcomes.

Results: Communication measures correctly classified 86% of participant group membership. The model was able to correctly classify 12 of 15 SE participants (80% sensitivity), and 12 of 14 UE participants (86% specificity). A model of four communication measures (WJ-III, FAVRES, VSIT and NDRT) explained 53% of the variance with measures of verbal reasoning speed and social cognition being significant. A model of five measures (WJ, FAVRES, VMT, VSIT, NDRT) explained 63% of the variance with no communication measures being independently predictive.

Conclusions: Communication measures were positively associated with stable employment in mid-level jobs after TBI. Communication skills of specific interest include verbal reasoning speed and social cognition. These measures are associated with employment stability, thus communication may be implicated with workplace separation decision in persons with TBI. Prospective studies demonstrating a predictive value of communication skills on employment outcomes in persons with TBI is necessary to demonstrate a causal relationship. Communication measures of interest will be reviewed and implications for assessment and treatment will be discussed.

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C113

Title:

Long-term clinical results of outcomes and associated toxicity of Low-dose-rate brachytherapy for cervical cancer

Objective:

To review and report the long-term treatment induced adverse events and outcomes of concomitant chemoradiotherapy (CRT) boosted by low-dose-rate (LDR) conventional brachytherapy (BT) planning in patients with local-regionally advanced cervical cancer.

Patients and Methods:

After obtaining institutional review board approval, we reviewed the records of patients with stage IB1 through IVA, intact cervical cancer who were treated at our institution between 1983 and 2009. Eligible patients underwent definitive radiotherapy with external beam radiation concomitant with cisplatin-based chemotherapy and boosted by LDR BT. Patient, tumor and treatment characteristics, treatment induced adverse events; namely gastrointestinal (GI), and genitourinary (GU) toxicities, as well as treatment outcomes; local-regional control (LRC), distant control (DC), progression free survival (PFS), and overall survival (OS) were reviewed and reported.

Results:

The study included 129 eligible cervical cancer patients; the median age was 46 years (range 28 – 81, mean 47 ± 11), consisting of stages I, II, III, IV (29.5%, 48.1%, 17.8% and 4.6% respectively). The median follow up was 37 months (mean 58 ± 59, range 3 – 275,). The 3-years OS, PFS, LRC, and DC were 75.9%, 71.6%, 84.7%, and 80.2%, respectively. The 5-years OS, PFS, LRC, and DC were 70.7%, 68.7%, 84.7%, and 78.3%, respectively. The 10-years OS, PFS, LRC, and DC were 68.7%, 62.3%, 82.5%, and 73.2%, respectively. Gastrointestinal (GI), and genitourinary (GU) grade 3 and 4 acute AEs were reported in 3.9%, and 0%, and chronic grade 3 and 4 AEs were reported in 20.9 %, and 12.4 % of all patients respectively.

Conclusion:

Definitive CRT followed by conventional LDR BT boost is effective, feasible and tolerable treatment modality for cervical cancer. A comparison with MRI Image-guided brachytherapy (IGBT) shows comparable treatment outcomes with superior OS in favor of LDR BT but inferior LC with a relatively worse toxicity profile.

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C114

Title: Treatment of CD30+ Lymphoproliferative Disorders with Single and Multi-fractionated Radiotherapy

Objective: CD30+ lymphoproliferative (LPD) disorders are rare, indolent, often multi-focal and recurrent variants of cutaneous T-cell lymphomas (CTCL). Phototherapy, topical steroids and low-dose chemotherapy are the most common forms of therapy, but sustained complete response (CR) is rarely achieved. Current literature lacks data that supports radiation therapy (RT) for CD30+ LPD. This retrospective review evaluates the clinical response of a palliative multi-fractionated course in the earlier years and a single fraction of RT in the later years to lesions refractory to or recurrent following first-line treatments.

Methods: The records of 5 patients (3 female, 2 male) with a total of 11 CD30+ LPD lesions, treated with a multi-fractionated course or single fraction of RT between October 1999 and July 2012, were identified and reviewed. All patients had received previous treatments such as topical steroids, PUVA, and chemotherapy. Only those patients with clinical and pathological evidence of symptomatic CD30+ LPDs refractory or recurrent to other therapies, with no history of other variants of CTCLs or skin disorders who had not received prior RT to the site were included.

Results: A total of 4 sites were treated with a single dose of 750-800 cGy (n=3). In the earlier years, 7 sites were treated with a total dose of 4200-4500 cGy in 200-250 cGy fractions (n=2). RT was administered with electrons to all sites. A bolus was used to increase the radiation dosage to the skin. Minimum and mean follow-up were 16 and 90.4 months (range, 16 – 147 months), respectively for the entire group. Median age was 50.5 years (range, 34 – 83 years). For disease sites receiving a single fraction therapy, a CR was seen in 4 of the 4 sites (100%). For the disease site receiving multi-fractionated therapy, a CR was seen in 7 of the 7 sites (100%). RT was well tolerated, and the only recorded toxicity was grade 1-2 dermatitis.

Conclusions: For previously treated, recurrent radiation-naıve CD30+ LPD lesions, palliative RT is well tolerated and is associated with excellent CR. Single fractions of 750-800 cGy is as effective as a multi-fractionated course and more convenient. Longer follow-up is necessary before conclusions regarding durable local control can be made.

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C115

Title: Pediatric resident performance discussing informed consent: A simulation-based needs assessment

Objectives: Our primary objective was to describe pediatric resident discussion of informed consent (IC) during a simulated scenario. We also pilot tested a new performance checklist for infant lumbar puncture IC discussions.

Methods: This cross-sectional observational study included a convenience sample of pediatric residents at Ann & Robert H. Lurie Children's Hospital of Chicago. Participants obtained IC from a standardized parent for lumbar puncture on a febrile neonate. Residents met the definition for a complete discussion if they addressed all pre-defined essential elements of IC (purpose, nature, risks, benefits, alternatives). Additionally, a critical item disclosure checklist for infant lumbar puncture IC created from an expert panel survey was pilot tested.

Results: Fifty-eight residents participated in the study. Thirty-nine (66%) residents did not address all elements of IC. Most commonly, residents did not discuss choosing not to perform the procedure (N=38, 66%). Residents also disclosed variable content about the nature and risks of the procedure. A mean 9.17 (SD 2.08) of the 15 expert panel-derived critical items were disclosed. There was no difference between training years for the percentage of residents who provided a complete IC discussion nor the mean critical items disclosed.

Conclusions: In a simulated scenario, most pediatric residents do not address all the essential elements of an IC discussion. Additionally, disclosed content for infant lumbar puncture is variable and inconsistent. Similarity between training years suggests experience alone does not lead to improvement with this skill. We believe future targeted education is needed to improve the consistency and content of IC discussions by trainees.

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C116

Title: Nerve Excitability Testing- A new technique to diagnose Episodic Ataxia Type I.

Summary: Nerve conduction studies have been the primary method in clinical practice for evaluating peripheral nerve physiology. The measurement indices consist of latency, amplitude and velocity of signal conduction. They have been valuable in diagnosis of peripheral nerve disease for the past five decades. These studies provide information primarily about the number of conducting fibers and the conduction velocity of the fastest fibers within the nerve but do not evaluate axonal membrane properties. Research, led by Dr Hugh Bostock at University College of London, has developed methods to study the excitability characteristics and threshold of stimulation of motor and sensory nerve fibers. A series of pulses are used to identify the threshold for excitation and then to evaluate how that threshold is changed by conditioning stimuli. These measures of nerve excitability provide an insight into the biophysical properties of signal conduction at the axonal membrane and are surrogate markers of ion channel function and the health of the myelin sheath. Recently developed software has streamlined this analysis and resulted in development of portable equipment that can be used in a clinical setting. Here we illustrate a case of a 15yo who was born hypotonic with joint contractures. He developed respiratory distress with stiff muscles and feeding difficulty requiring a G-tube and tracheostomy at 5months of age. Seizures followed and carbamazepine was added. Within a year of starting carbamazepine he was able to be weaned off the ventilator and decannulated. The G-tube was also discontinued and oral feeding resumes. He walked at $3^{1/2}$ yrs and had a profound delay in developmental milestones. Exam was remarkable for muscle twitching around his mouth. Beginning around 12yrs of age, he had episodes, where he seemed off balance but was alert and aware of his environment. Seizures stabilized and it was noticed that weaning off carbamazepine made his muscles stiff, causing gagging and labored breathing. Multiple metabolic and genetic testing was unrevealing. Muscle biopsy was non diagnostic. Nerve conduction studies and needle electromygraphy at 11yrs of age demonstrated repetitive discharges to single nerve stimuli and myokymia. Nerve excitability testing was used to further define the pathophysiology of patient's symptoms and arrive at a diagnosis of Episodic Ataxia Type 1 that was confirmed by a positive KCNA1 gene mutation.

Objective: Introduce nerve excitability testing as a new technique to study axonal membrane properties and present a diagnostic case study.

Sample: Single case study and literature review.

Methods: Protocol consists of using a series of brief, controlled electrical stimuli over the median nerve at the wrist. Stimulation and recording are controlled by QTRAC software© (copyright Institute of Neurology, London, with multiple excitability protocol TRONDHM). Data can be plotted and responses analyzed by the software. Nerve excitability testing using the TrondE protocol (Qtrac software, ©UCL Institute of Neurology, Queen's Square, London, UK)

Results: Nerve excitability testing showed a profile of the multiple excitability measures that is characterstic for KCNA1 mutation associated with Episodic Ataxia Type 1.

Conclusion: Nerve excitability testing is a new technique that can be used to study axonal membrane properties and has potentially wide applications and can complement standard nerve conductions studies.

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Title: [NICARDIPINE *VERSUS* ESMOLOL FOR MANAGEMENT OF EMERGENCE HYPERTENSION AFTER CRANIOTOMY]

Background: Emergence hypertension following craniotomy is a well-described, poorly understood, phenomenon. Strict control of blood pressure is important during and after neurosurgical procedures; failure to prevent acute rises in arterial blood pressure places patients at increased risk of intracranial bleeding, cerebral edema, increased intracranial pressure, and prolonged hospital stays. Emergence hypertension after craniotomy seems to be the result of an acute and transient increase in catecholamine release, peripheral vasoconstriction, and reduced barorecepor sensitivity. The purpose of this study was to determine whether nicardipine or esmolol, given as a sole antihypertensive agent, is more effective in controlling blood pressure after craniotomy.

Methods:30 subjects were block randomized to receive either nicardipine or esmolol in groups of 10. Anesthetic regimen included remifentanil, with no other narcotic agents, propofol, and either desflurane or sevoflurane. An intra-arterial catheter was placed. Infusion of the study drug (nicardipine or esmolol) was initiated when SBP > 130 mmHg with goal to maintain SBP < 140 mmHg. Subjects received a 15 mcg/kg bolus of nicardipine or 0.5 mg/kg bolus of esmolol as needed followed by an infusion initiated at 5 mg/hr (nicardipine) or 50 mcg/kg/min (esmolol). The study drug was titrated every 5 minutes, increasing 5 mg/hr and administering 15 mcg/kg bolus every minute to a maximum dose of 15 mg/hr for nicardipine; for esmolol, infusion was increased by 50 mcg/kg/min and a 0.5 mg/kg bolus was given. If SBP was not maintained < 140 mmHg 5 minutes after achieving the maximum dose of study drug, medication “failure” was declared and rescue drug (medication to be determined per anesthesiologist discretion) was administered. Chi-square analysis was done on failure rate and need for rescue, with $p < 0.05$ considered significant.

Results:Of 15 nicardipine patients, there was 1 failure (6.7%); of 15 esmolol patients, there were 6 failures (37.5%). This was a statistically significant difference, with $p = 0.04$. Moreover, within the nicardipine cohort, 0 patients required rescue medication, while within the esmolol cohort, 5 patients required rescue medication ($p = 0.02$). There was no significant difference between cohorts in terms of demographic data, comorbid history, or blood pressure parameters throughout the 1-hour study period.

Discussion:Based on the results presented above, it appears that nicardipine is superior to esmolol as a sole agent in controlling blood pressure following craniotomy. This result was not unexpected, as nicardipine has a direct peripheral vasodilatory effect on both systemic and cerebral vasculature, while esmolol’s hemodynamic effect is more indirect, affecting cardiac beta-1 receptors and decreasing inotropy and chronotropy. Similar studies comparing these two drugs have been conducted in various postoperative settings, but not in the setting of post-craniotomy hypertension. The current study would seem to indicate that for treating post-craniotomy hypertension, nicardipine is a relatively effective sole agent, while if esmolol is used, rescue antihypertensive medications should be readily available. Future analysis related to this question will focus on possible confounding variables, such as tumor location and hemodynamic changes in the longer-term (e.g., 24 hours).

C118

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Select one: Clinical Research

Title: Mechanisms Underlying Chronic Whiplash: Contributions from an Incomplete Spinal Cord Injury?

Summary: Data from the Centers for Disease Control indicates that over 4-million adult drivers and passengers are treated in US emergency medicine departments annually for whiplash as the result of a motor-vehicle collision (MVC). Most individuals recover spontaneously, but 25% will, for reasons that are not clear, suffer from chronic whiplash-related disability. Estimated costs for medical and rehabilitative care for these patients with poor functional recovery are ~$100 Billion annually, but no treatments have shown to positively influence their outcomes. Structural damage on objective imaging is rarely present and the prevailing opinion remains that poor functional recovery is largely influenced by social, psychological and behavioral factors, not biological.

Objective: The complex signs and symptoms in the 25% that do not recover bear striking similarities to non-WAD patients with incomplete spinal cord injury (SCI); raising the possibility that chronic WAD is an expression of an initial mild injury to the spinal cord. As such, the objective of this prospective study is to test our central hypothesis that chronic WAD is an expression of a mild incomplete SCI.

Sample: 4 (out of an expected 100) subjects with varying levels of whiplash-related disability from a MVC.

Methods: We propose to combine clinical and radiological measures to demonstrate that losses in spinal neural substrate, increased muscle fatty infiltrates and the inability to properly activate ankle muscles in patients with chronic WAD is an expression of a mild incomplete SCI.

Results: We have recently expanded our methods under the support of a current NIH KL2 (KL2 RR025740) award at Northwestern to 1) quantify the expression of muscle fat in both the neck and extremities, 2) quantify altered spinal cord physiology with magnetization transfer ratios (MTR), and 3) quantify losses in motor output using measures of maximum plantar flexor torques and twitch interpolation techniques in participants with varying levels of WAD-related disability. Using the above methods, we have produced preliminary evidence to illustrate that the magnitude of muscle fatty infiltrates in the severe group are two times greater in the lower extremity (plantar flexor muscles) than the recovered and healthy controls. The expression of muscle fat in severe whiplash corresponds to reductions in MTR (less myelin) in the ventromedial and dorsolateral portions of the cervical spinal cord and muscle fatigue. These findings provide preliminary evidence to suggest that the expression of muscle fatty infiltrates and reduced motor output could be the result of an initial mild SCI affecting the descending motor pathways within the white matter of the cord.

Conclusions: The long-term goals of this research is to improve outcomes in WAD, but before this can be realized, it is crucial we understand the neurophysiological mechanisms underlying poor functional recovery in the 25% of individuals with a seemingly more complex injury whose symptoms persist. This new knowledge will set the stage for future studies investigating more objective quantitative assessments and the development of targeted science-based interventions that avoid stigmatization of the individual with chronic WAD as having, what some would say, is purely a psychosomatic pathology.

C119

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Title: [Determining the Specificity of Novel Antibodies in Immunohistochemistry: Practicing Rimm's Lab Algorithm]

Summary: Immunohistochemistry (IHC) is a favored technique to identify and semi-quantitate protein expression in anatomic pathology laboratories around the world. The conventional utility of IHC in clinical pathology laboratories extend from diagnostic to prognostic services in the line of patient care. Since laboratories do not have a standardized process of antibody validation, we would like to present our experiences regarding novel IHC antibody validations by following Rimm's Lab Algorithm.

Objective: To determine the specificity of novel immunohistochemistry antibodies and to report observations of non-specific antibodies to the research community.

Sample: We have implemented Rimm's lab algorithm on a total of 43 IHC antibody validations in our core facility in the last 2 years.

Methods: The antibodies ranged from novel transcription factors, signal transduction moieties and structural proteins with no validation information existing in the literature to well standardized stains. We followed rigorous antibody selection criteria, regulation of pre-analytical variables, design and development of clonal controls with wide dynamic range, comprehensive optimization work up including multiple antigen retrieval methods and antibody titrations.

Results: From the 43 novel antibodies (32 unique markers), 19 (46%) antibodies failed to demonstrate the specificity. The satisfactory validation rate was 53% with clear demonstration of specificity.

Abs	D.S.B with first Ab purchase	D.S.B with second Ab purchase	D.S.B with nth Ab purchase	Cell lines used to test Abs	D.S by Abs
43	11	9	3	23	19

D.S.B (Demonstration of Specificity of a Biomarker); Ab (Antibody)

Conclusions: Comprehensive utility of clonal specific cell lines are critical to determine specificity of antibodies. Significant number of novel antibodies sold by commercial companies could not establish specificity. Antibody specificity disclosure (pictorial) is paramount for the scientific community to have confidence in the data presented in the literature. We believe Rimm's lab algorithm is a worthy design to replicate in validation of novel antibodies across pathology laboratories.

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C120

Impact of cylinder size in high-dose rate brachytherapy (HDRBT) for primary cancer in the vagina

Purpose

In intracavitary HDRTBT, picking a cylinder for 0.5 cm variation of diameter could easily become subjective, for example a 2.5 cm cylinder could be easily picked instead of a 3.0 cm cylinder during the fitting simulation, because the vaginal cavity is elastic. Therefore, the dosimetric impact implied in the size change needs to be evaluated. The purse of this study is to evaluate the dosimetric impact of cylinder size in high dose rate Brachytherapy for primary vaginal cancers.

Method

Patients treated with HDR vaginal vault radiation in a list of cylinders ranging from 2.5 to 4 cm in diameter at 0.5 cm increment were analyzed. All patients' doses were prescribed at the 0.5 cm from the vaginal surface with different treatment lengths. A series of reference points were created to optimize the dose distribution. The fraction dose was 5.5 Gy, the treatment was repeated for 4 times in two weeks. A cylinder volume was contoured in each case according to the prescribed treatment length, and then expanded to 5 mm to get a volume Cylinder_5mm_exp. A volume of PTV-Eval was obtained by subtracting the cylinder volume from the Cylinder_5mm_exp. The shell volume, PTV-Eval serves as the target volume for dosimetric evaluation.

Results

DVH curves and average doses of PTV-Eval were obtained. Our results indicated that the DVH curves shifted toward higher dose side when larger cylinder was used instead of smaller ones. When 3.0 cm cylinder was used instead of 2.5 cm, for 3.0 cm treatment length, the average dose only increased 1%, from 790 to 799 cGy. However, the average doses for 3.5 and 4 cm cylinders respectively are 932 and 1137 cGy at the same treatment length. For 5.0 cm treatment length, the average dose is 741 cGy for 2.5 cm cylinder, and 859 cGy for 3 cm cylinder.

Conclusion

Our data analysis suggests that for the vaginal intracavitary HDRBT, the average dose is at least 35% larger than the prescribed dose in the studied cases; the size of the cylinder will impact the dose delivered to the target volume. The cylinder with bigger diameter tends to deliver larger average dose to the PTV-Eval.

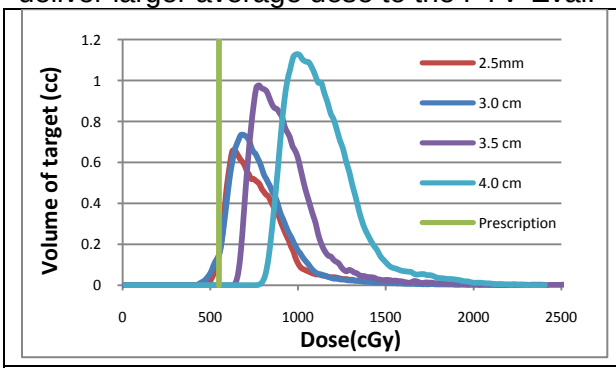

Fig.1 DVH curves of PTV_Eval for four types of cylinder applicator. Prescription dose is 5.5 Gy, at 0.5 cm from the vaginal surface with 3.0 cm treatment length.

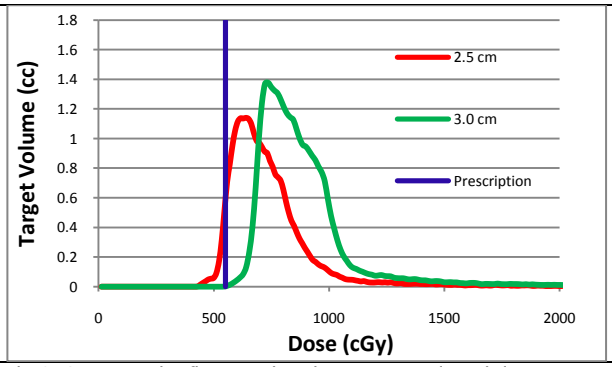

Fig 2 Same as the figure 1, but the treatment length is 5 cm.

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C121

Title: Predicting tolerance to food allergens using a new diagnostic biomarker: The ratio of sIgE to total IgE

Summary: The oral food challenge remains the gold standard for confirming the development of tolerance to food allergens. Allergists currently rely on allergen-specific IgE (sIgE) or skin prick tests along with clinical history to determine whether a patient is ready to proceed with an oral food challenge to confirm tolerance. However, both tests have high rates of false positive results, mislabeling patients who are tolerant as allergic to the food. Given that sIgE levels may be falsely-elevated by other atopic conditions, we hypothesized that the ratio of sIgE to total IgE ("the Ratio") may be more accurate than sIgE alone in predicting tolerance. Our study found that the Ratio was indeed more accurate, and thus has the potential to improve clinical practice.

Objective: The objective of our study was to examine the accuracy of the ratio of sIgE to total IgE (the "Ratio") in predicting the outcome of oral food challenges performed to confirm the development of tolerance to food allergens.

Sample: Our sample included children with food allergy who participated in an oral food challenge to assess the development of tolerance at an allergy outpatient clinic (2009–2013).

Methods: Medical records of these children were reviewed for IgE levels and concomitant oral food challenge outcomes (n=572 challenges among 427 children). A board-certified allergist in the clinic validated a randomly selected 10% of charts in the final sample, and found no errors. Adjusted logistic regressions were estimated to assess correlations between challenge outcome and the Ratio. Area under the curve (AUC) for the Receiver Operating Characteristic (ROC) curve was computed to compare the accuracy of the Ratio to sIgE alone in predicting tolerance.

Results:
Correlation with oral food challenge: The Ratio for participants who failed their challenge was higher than the Ratio for those who passed their challenge (Ratio when failed=1.48% vs. Ratio when passed=0.49%). There was an overall 25% decrease in odds of passing a challenge for each unit increase in the Ratio (Odds Ratio=0.75; 95% confidence interval=0.58–0.95; P=0.02).

Accuracy: The area under the ROC curve (AUC) representing the Ratio was significantly larger than that of sIgE alone, indicating the Ratio was significantly more accurate than sIgE alone in predicting challenge outcomes (AUC for the Ratio=0.69 vs. AUC for sIgE alone=0.55; P=0.03).

These trends were mostly associated with typically more persistent food allergens, such as peanut, tree nuts, shellfish, and seeds: (1) Ratio when failed=2.18% vs. Ratio when passed=0.41%; (2) AUC for the Ratio=0.81 vs. AUC for sIgE alone=0.54; P<0.01.

Conclusions: Our findings suggest that the Ratio may be more accurate than allergen-specific IgE alone in predicting outcomes of challenges performed to confirm the development of tolerance. With further research to determine optimal predictive cut-off points, our findings have the potential to improve clinical practice.

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C122

Title: Chronic Granulomatous Disease (CGD): A Large, Single-center US Experience

Summary: CGD is an uncommon, primary immunodeficiency, which can be inherited in either an X-linked or autosomal recessive manner.

Objective: We sought to review our large, single-center experience with CGD.

Methods: We performed a retrospective review of all 25 patients with CGD followed at Lurie Children's Hospital from March 1988 - Nov. 2013. Fisher's exact test was used to compare differences in percentages of categorical variables and student's t-test was used to compare means for continuous variables. All p values are 2-sided and considered significant when < 0.05.

Results: There were 21 males and 4 females, including 4 groups of siblings. Of those whose mode of inheritance was known, 17 were X-linked and 7 were autosomal recessive. The average age at diagnosis was 3.2 years; 1.9 years for those with X-linked inheritance and 5.4 years for those with autosomal recessive inheritance ($p < 0.05$). Of the 11 patients who were genotyped, 2 had defects in p47Phox, 2 in p67 phox and 7 in gp91 phox. Serious infections included those due to serratia (6), klebsiella (5), aspergillus (6), and burkholderia (5). The most common serious infectious syndromes were pneumonia/lung abscess (11), liver abscess (5), and brain abscess (2). 10 patients experienced non-infectious granulomatous complications including colitis (8) and eosinophilic cystitis (2); there was no significant difference in the incidence of non-infectious complications between the 2 modes of inheritance. Four patients were below the 5th % for height and weight; the remainder of the patients were distributed as follows, based on their most recent heights and weights: 9 5-25%, 5 50th %, 7 > 75th %. The average length of follow-up following diagnosis was 10.3 years. 24/25 patients were maintained on thrice weekly subcutaneous interferon gamma and daily oral prophylaxis with trimethoprim-sulfa and an azole (usually itraconazole). One patient was referred for stem cell transplant and died of measles inclusion body encephalitis. There was 1 other death from Burkholderia sepsis.

Conclusions: Our study represents a large US single center experience with CGD. 24/25 patients were maintained on thrice weekly subcutaneous interferon gamma and oral prophylactic trimethoprim-sulfa and an azole. 23/25 patients are alive after 3079 patient-months of follow-up without having undergone stem cell transplantation

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C123

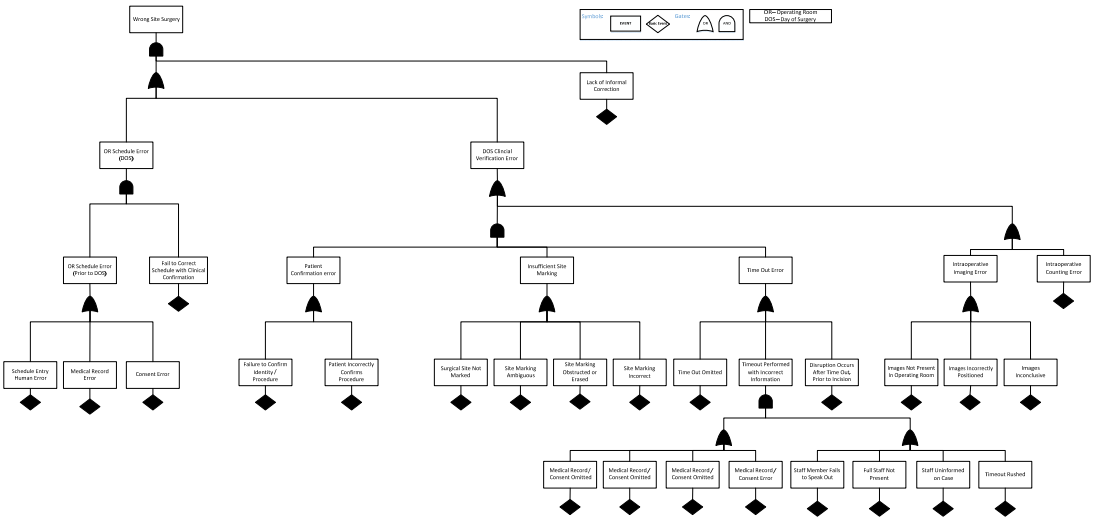
Title: Applying Fault Tree Analysis to the problem of Wrong Site Surgery

Objective: To perform a fault tree analysis of operative scheduling and confirmation to assess the reliability of the system in preventing Wrong Site Surgery (WSS) and identify high-priority targets for interventions aimed at reducing WSS.

Methods: We performed a systematic review of the literature reporting quantitative evidence for risk factors leading to WSS or case studies containing root causes for WSS. We used these studies to develop a fault tree and categorized all the noted causes or "faults" based on their potential to contribute to WSS. Aspects of the process where a single error could result in WSS were labeled with OR gates whereas pieces of the process where there were multiple checks and balances were labeled with AND gates. The overall redundancy of the system was evaluated based on prevalence of AND gates and OR gates.

Results: In total, 37 studies described risk factors for Wrong Site Surgery, and our final fault tree contained 35 faults. The majority of the faults fell into five main categories: 1) Operating room scheduling, 2) Patient confirmation – day of surgery, 3) Site marking, 4) Timeout process, 5) Intraoperative imaging and clinical confirmation. The faults originating from the aspect of the process occurring on the day of surgery were more robust due to the Universal Protocol mandating patient verification, surgical site signing and a brief timeout. Therefore these main categories were connected with AND gates and showed some redundancy. Less redundancy was noted for the pieces of the process prior to the day of surgery resulting in more OR gates.

Conclusion: Fault Tree Analysis is a valuable tool for understanding the interaction of errors or faults within a system. With this universal fault tree, institutions can populate the tree with their own frequencies and create interventions targeted at the specific faults that are prevalent in their respective system. Our analysis shows that progress has been made in creating more redundancy and reliability within the preoperative process, however so long as pieces of the process rely on human transcription / verification there will remain susceptibility within the process.



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Title: Isolating Raphé from Local Brainstem Activities in fMRI

Summary/Objective: Functional MRI of the brainstem raphé nuclei may offer measures of serotonin function in depression. Low serotonin availability transiently follows diets that acutely deplete the serotonin precursor, tryptophan. This study examined fMRI detection of changes in brainstem raphé regional function using a dietary procedure known to diminish serotonin synthesis. fMRI detection of dorsal raphé activity was tested for specificity compared to three surrounding brainstem regions.

Methods: Medicated depressed patients (n=11) were imaged twice , one week apart, following either acute tryptophan depletion (ATD) or sham diet in a random, double-blind sequence. Time series fMRI data were obtained from 7 m resting fMRI scans at 3T, TR=2 s, and were wavelet-filtered to provide 4 discrete frequency bands. A brainstem region was manually drawn to include the dorsal raphé nucleus. Three surrounding blocks of voxels were similarly sampled. ATD and sham effects on signal power in each frequency band were compared, as were correlations between raphé and each surrounding region. Analyses used corrected, paired t-tests.

Results: Power in a ‘high’ frequency band (0.25 to 0.125 Hz) changed significantly in the raphé ($p<0.01$) but not in the three surrounding regions (all $p >.4$). Correlations between activity time series from raphé and the other regions were highly distinct during ATD at medium (.12 to .06 Hz) and low (.06 to .03 Hz) frequencies ($p<0.01$).

Conclusions: Local activity and the correlations between a dorsal raphé region and surrounding brainstem tissues are distinctly and specifically affected by serotonin availability. Brainstem dorsal raphé fMRI is locally sensitive and specific to changes in 5HT function. Imaging of raphé activity may improve our understanding of both depression and mechanisms of antidepressant action. An effort to confirm the finding and extend the sample size is ongoing.

(presented at Society of Biological Psychiatry May 2013)

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Title: Knowledge of Uterine Fibroid Symptoms & Presentation amongst African-American Women: A Pilot Study

Summary: African-American women are aware of the increased prevalence of fibroids in African-American women and the associated clinical symptoms, but lack knowledge of their systemic sequelae.

Objective: The goal of this pilot study is to assess awareness and knowledge of fibroid symptoms and presentation amongst African-American women.

Sample: A convenience sample of women present at a community fair was recruited in August 2011. Approximately 2,000 men and women attended the fair. Study participation was restricted to English-speaking, African-American women between the ages of 18 and 70 years.

Methods: African-American women (AAW) between the ages of 18-70 attending a community fair in Chicago were recruited. Demographic information was obtained and subjects completed a questionnaire assessing health literacy, general reproductive health knowledge, and knowledge of fibroid prevalence, diagnosis and clinical manifestations.

Results: 199 AAW with a mean age of 48.8 +/- 12.9 years participated. 33.2% had at least a college degree, 66.3% had a household income <$50,000 and 21.6% had no health insurance. The prevalence of inadequate health literacy was 14.1%. The majority of subjects knew that fibroids are more common in AAW (74.9%), can cause menorrhagia (80.9%) and can increase the risk of miscarriage (74.4%). However, a significant number thought that fibroids are cancerous (47.2%) or increase the risk of heart disease (32.7%). 46.2% believed that fibroids can be diagnosed with a blood test. Internet usage and education level had the highest correlation with knowledge of fibroids and their systemic sequelae. Of note, health insurance status and health literacy status showed no significant correlation with fibroid knowledge.

Conclusions: The majority of women at an urban community fair were aware of the increased prevalence of fibroids in AAW and the associated clinical symptoms. However, there was some degree of misconception of the systemic sequelae of uterine fibroids. There is a need to raise fibroid awareness and correct any misconceptions of their systemic manifestations or diagnosis. The association of "Ever having used the internet" and knowledge of uterine fibroids suggests that technological interventions may improve health knowledge and health behaviors in this population.

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Title: Constellations of Complex Interpersonal Trauma and Symptom Profiles among Children in Child Welfare: Implications for a Developmental Trauma Framework

Summary: This study examined associations between childhood trauma histories, mental health needs and strengths among 16,212 youth within the child welfare system in Illinois. Data were analyzed using the proposed Developmental Trauma Disorder diagnostic criteria, a diagnosis with ongoing field trial testing to examine its scientific validity and clinical utility for possible future inclusion in DSM. Youth exposed to different constellations of interpersonal trauma were compared in relation to affective/physiological symptoms, attentional/behavioral problems, self/relational problems, posttraumatic stress symptoms, and adverse child welfare outcomes, including psychiatric hospitalizations and placement disruptions.

Objective: Previous studies have shown that children within the child welfare system and other service settings have high rates of exposure to complex, interpersonal trauma which are often associated with a broad range of symptom areas and significantly higher rates of mental health problems (D'Andrea, Stolbach, Ford, Spinazzola, & van der Kolk, 2012; Finkelhor, Ormrod, & Turner, 2009; Greeson et al., 2011; Kisiel, Fehrenbach, Small, & Lyons, 2009; Spinazzola et al., 2005). More empirical evidence is needed to understand how constellations of various types of trauma exposure and symptoms relate to each other and co-occur in a meaningful way. This study aims to identify youth with distinct patterns of trauma exposure upon entry into the child welfare system and to determine whether these different trauma exposure groups vary in symptomatology, symptom severity, and child welfare outcomes.

Sample: The sample included 16,212 youth entering into the Illinois child welfare system.

Methods: Data were collected on children's trauma history, current functioning, and symptomatology using the IDCFS Child and Adolescent Needs and Strengths (CANS) Comprehensive assessment tool (Lyons, Gawron, & Kisiel, 2005). Data were analyzed in light of the proposed Developmental Trauma Disorder diagnostic criteria.

Results: Youth were compared in terms severity of symptoms and child welfare outcomes. Rasch modeling techniques were also used to determine the natural clustering of symptoms by trauma group. Findings suggest that non-violent, attachment-based traumas in combination with violent interpersonal traumas have an exponential impact on negative outcomes in comparison to other constellations of trauma and beyond the cumulative effects of trauma alone. Youth with this constellation of complex, interpersonal traumas also exhibited higher levels of functional impairment and were more likely to have placement disruptions and psychiatric hospitalizations. Based on the Rasch analyses, specific symptoms within a given criterion also clustered together more tightly, with the strength of the relationship between items and degree of impairment increasing overall for the combined violent/non-violent trauma group.

Conclusions: Findings suggest a developmental trauma framework can more adequately capture the spectrum of needs of these youth than existing diagnostic formulations. The results support a constellation of interpersonal trauma experiences and symptoms that appear to "fit" into a framework that may help to discriminate patterns of symptoms from other groups of youth exposed to trauma. Utilizing this developmental trauma framework for assessment, treatment planning, and intervention can lead to more effective and targeted services for these children.

C127

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Title: Global Longitudinal Strain Predicts Long-Term Adverse Cardiac Events Among Patients with Known Coronary Anatomy

Summary:

Global longitudinal strain measured by 2D speckle tracking echocardiography (GLS) from baseline images has been shown to have similar diagnostic utility for obstructive and non-obstructive coronary artery disease (CAD) as wall motion score index (WMSI) from the stress echocardiogram. It is less well understood if abnormal GLS can predict future adverse cardiac events.

Objective:

This study seeks to determine the prognostic utility of GLS in predicting major adverse cardiac events (MACE) in up to 4 years of follow up in patients who have undergone coronary angiography following a stress echocardiogram.

Sample:

This retrospective cohort study included 122 consecutive patients (72 males, 50 females, mean age 59.7 years) who underwent coronary angiography within 3 months of stress echocardiography (mean separation 5.5 days).

Methods:

GLS was determined using GE EchoPac software. The MACE endpoint included all cause mortality, heart transplant, coronary revascularization, myocardial infarction, and congestive heart failure hospitalization. Outcomes were determined through review of patient medical records, the Social Security Death Index, and patient telephone interviews. Data was analyzed using a Kaplan-Meier survival analysis and compared using Gehan-Breslow-Wilcoxon tests with a significance level of p=0.05.

Results:

Patients were followed for an average of 3.3 years. 13 patients (11%) experienced a MACE. Patients with abnormal GLS (GLS $> -16.77\%$) experienced a significantly shorter time to composite event that those with normal GLS ($p = 0.041$). In contrast, patients with abnormal WMSI did not experience a significantly shorter time to event than normal patients ($p = 0.174$).

Conclusions:

In a cohort of patients who underwent coronary angiography following a stress echocardiogram, abnormal GLS when compared with WMSI predicted shorter time to first MACE over 4 years of follow up. Unlike WMSI, GLS can be obtained from a resting echocardiogram and appears to have prognostic value for predicting MACE.

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C128

Title: Association of Kidney Dysfunction with Chronotropic Incompetence in Heart Failure with Preserved Ejection Fraction

Summary: Heart failure with preserved ejection fraction (HFpEF) is an increasingly common condition associated with high healthcare costs, morbidity, and mortality. Patients with HFpEF often exhibit chronotropic incompetence (CI), the inability to match heart rate (HR) to increased metabolic demand during exertion. Although CI is an important contributor to reduced exercise capacity and premature death, clinical factors associated with its presence remain unknown for patients with HFpEF. Such data may help elucidate the pathophysiology of CI in HFpEF and guide screening and treatment decision-making for HFpEF patients.

Objectives: To determine the clinical factors associated with CI in patients with HFpEF.

Sample: 157 HFpEF patients consecutively enrolled in the Northwestern University HFpEF program who received cardiopulmonary exercise testing (CPET) between March 2008 and January 2011. Our criteria included patients with confirmed heart failure and a left ventricular (LV) ejection fraction > 50%, but excluded patients with valvular disease, a history of cardiac transplantation or prior LV ejection fraction < 40%, or constrictive pericarditis.

Methods: The primary outcome variable was CI, defined as failure to achieve 80% heart rate (HR) reserve during CPET (< 65% if using beta blockers). Percent heart rate (HR) reserve was estimated as the difference in peak and resting HR achieved relative to difference in resting HR and age-predicted maximal HR. Participants who achieved inadequate exercise effort (respiratory exchange ratio ≤ 1.05) were excluded from the final analyses.

Input variables included clinical and laboratory metrics, such as diabetes and glomerular filtration rate (GFR), and measures of cardiovascular function derived from ECG, echocardiography, invasive hemodynamics, and CPET data. T-tests and fisher exact tests were used to determine correlates of CI in our sample. P-values from univariable analyses were adjusted by false discovery rate methods to yield an effective α-level of 0.003. Candidates identified in univariable analyses were then examined in a series of multivariable logistic regression models of CI in order to rule out confounding bias. Finally, our results were re-assessed using continuous measures and alternative formulations of chronotropic response.

Results: Of 157 participants, 73% were women, 64% used beta blockers, 32% had chronic kidney disease, and 40% had coronary artery disease. Respiratory exchange ratio > 1.05 was achieved by 108 (69%) participants, including 79/108 (76%) with CI. Lower estimated GFR, higher B-type natriuretic peptide, and higher pulmonary artery systolic pressure were each associated with CI. A 1-standard deviation decrease in GFR was independently associated with CI (adjusted odds ratio = 2.40, 95% CI = [1.26, 4.57]) after adjustment for smoking status, log B-type natriuretic peptide, and beta blocker usage. Linear models of percent HR reserve on GFR ($\beta = 0.31$, standard error = 0.10) corroborated a significant association ($p = 0.002$) that appeared linear on scatterplot. These findings were unchanged after re-calculation of percent HR reserve and CI based on alternative formulations used in the literature.

Conclusions: CI is common and strongly associated with GFR in HFpEF. Our results indicate that kidney function may mark or contribute to the development of CI in HFpEF. HFpEF patients with chronic kidney disease may need to be screened for CI prior to starting medications (e.g., beta blockers) that could exacerbate CI. Following studies will re-examine this result in a larger cohort and specify the physiologic relationship between GFR and chronotropic competence.

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C129

Title: Temporary IVC filters that are not Retrieved: Clinical Predictors in 1,000 Consecutive Cases

Objectives: Compared to permanent filters, higher complication rates occur with long-term use of temporary filters. Our hypothesis is that clinical factors at the time of placement can predict the need for a permanent instead of a temporary filter.

Methods: An IRB-approved retrospective review was performed of both vascular surgery and interventional radiology prospective databases between 2008 and 2013. Protocols to maximize removal were in place. Patients were placed in Group A if retrieval was attempted or Group B if no retrieval attempt was made. Clinical factors for both groups were analyzed and compared (Table 1).

Results: Of 1,021 filters, removal was attempted in 60% (Group A) and no attempt at removal in 40% (Group B). Retrieval rate in Group A was 95%. The most common reason removal wasn't attempted was lost follow-up. In the univariate model (Table 1), factors associated with permanence included male sex, old age, history or indication of VTE with inability to anticoagulate, malignancy and neurologic condition. Factors most predictive of permanence in the multivariate model were malignancy (OR 3.0, p<0.001) or neurologic disorder (OR 2.69, p=0.0005).

Conclusions: Despite protocols, 40% of temporary filters were not removed. These patients are more likely to be older, male, have a malignancy or history of neurologic condition or VTE. These factors can be used prospectively to aid in deciding whether a permanent and not a temporary filter should be used.

Factor/Group	Group A (n= 619)	Group B (n=405)	Odds Ratio (95% CI)	p-value
Male Sex (%)	270 (44)	225(62)	1.609 (1.25-2.070)	0.00002
History of VTE (%)	351 (57)	273(67)	1.591 (1.224-2.068)	0.0005
Malignancy (%)	153 (25)	200(49)	2.971 (2.274-3.881)	<0.0001
Neurological Condition (CVA, paralysis, Dementia) (%)	24 (4)	35(8)	2.351 (1.377-4.017)	0.002
Indication: VTE + AC Contraindication (%)	290 (47)	283(70)	2.653 (2.036-3.459)	<0.0001
Indication: VTE + AC Complication (%)	25 (4)	49(12)	3.279 (1.990-5.403)	<0.0001
Indication: VTE + AC Failure (%)	13(3)		2.253 (0.954-5.321)	0.06
Indication: High Risk VTE (%)	20(5)		0.460 (0.273-0.773)	0.003
Indication: Prophylaxis (%)	39(10)		0.173 (0.119-0.251)	<0.0001

VTE=venous thromboembolism AC=anticoagulation CVA=stroke

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C130

Title: Is Knowledge Power or is Ignorance Bliss? : The Impact of Infertility Related Knowledge on Patient Anxiety and Appraisal of Treatment

Summary: Infertility has been characterized as a stressor that can give rise to psychological difficulties such as anxiety, depression, and distress. An individual's appraisal of a situation is integral to the experience of stress and to the individual's ability to cope with the stressor. Studies have shown that more attention should be given to optimizing patients' experience and understanding of the infertility treatment process which may lead to less emotional distress. Patient demographic characteristics and knowledge may have an impact on their appraisals of the infertility treatment process. There are no studies assessing the impact of the initial visit with an infertility specialist on patient knowledge of reproduction and infertility, patient anxiety, and appraisal of the infertility treatment process.

Objective: To determine the impact of the initial infertility visit and treatment related knowledge on patient anxiety and appraisals of infertility treatment.

Sample: Non-pregnant, English-speaking women, ages 18-50 years old, attending their first visit with an infertility specialist.

Materials and Methods: Pre and post-visit surveys were completed by non-pregnant, English speaking, 18-50 year old women, at their first infertility clinic visit. Surveys included questions on female reproductive anatomy, fertility and infertility treatment knowledge; the 3 subscales of Threat (future harm), Loss (damage done), and Challenge (potential for growth) of the Appraisal of Life Events scale (ALE); and a single-item anxiety measure.

Results: Out of 336 women approached, 234 completed the surveys of which the majority were white (70%), well educated (>90% have >4 years of college education), with a household income of >$100,000 (68%). Average age was 38.4 ± 4.7 years (mean ± SD). There was a decrease in scores on the Threat and Loss subscales and anxiety score ($p<0.001$) after the visit and an increase in Challenge subscale scores ($p=.045$). Increased female body knowledge and awareness of ART terms correlated with decreased pre-visit ($p=.033$, $p=.030$) and post-visit Challenge scores ($p=.009$, $p<.001$). Lower cumulative knowledge was also associated with increased post-visit Challenge scores ($p=.010$).

Conclusions: The initial visit with an infertility specialist decreased patients' treatment-related anxiety and appraisals of treatment as threatening or as a loss. Education from health providers on female anatomy and fertility concepts at the initial visit may be associated with some improved cognitive appraisal of treatment and a decrease in treatment-related anxiety. Further research should examine the relationship between limited knowledge and positive appraisal of fertility treatment, as this may indicate unrealistic treatment expectations.

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C131

Title: A Sixth Sense: Does Subjective Assessment of Menstrual Bleeding Correlate With Measures of Anemia Amongst African American Women (AAW)?

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Summary: It is unclear if self-assessment of menstrual bleeding correlates with objective measures of anemia. AAW are at high risk of having heavy bleeding and fibroids, and are thus at risk of developing anemia. Therefore, it is important to elucidate whether subjective assessment of bleeding in these women correlates with markers of anemia.

Objective: To evaluate whether personal assessment of bleeding is correlated with subjective and objective measures of anemia in this subset of AAW.

Sample: AAW ages 18-65 attending an urban community health fair were asked to participate in this survey study. 144 AAW completed the survey.

Methods: AAW answered questions about menstrual history and typical menstrual bleeding. They reported experiences with either general or menses-associated symptoms of anemia. AAW also provided serum samples for complete blood counts and iron studies.

Results: Of the those who reported having menstrual cycles, average flow was classified as: very heavy (17.2%), heavy (32.8%), normal (37.9%) or light (12.1%). The average length of flow was also reported, with 36.8% stating that bleeding continued for 5 to 7 days or more. AAW who classified their menses as very heavy or heavy reported more general symptoms of anemia (p=.007), more frequent anemia-associated symptoms during menses (p=.028), and were more likely to have fibroids (p=.049) than those who reported normal or light menses. AAW who classified their flow as lasting more than 7 days also reported more frequent anemia-associated symptoms during menses than AAW who described shorter menses (p=.031). Laboratory testing was performed on 72.1% of the menstruating AAW. Those who reported very heavy or heavy menses had lower hemoglobin (p=.022) and hematocrit levels (p=.012) than AAW who classified menses as normal or light. In addition, AAW who reported heavy menstrual bleeding had lower ferritin levels than those who described menstrual bleeding as normal or light (p=.035). Ferritin levels were also lower in AAW who reported that bleeding lasted 5 to 7 days or more when compared to AAW who described shorter length of flow (p=.047).

Conclusions: AAW with heavier menses reported more symptoms of anemia and had lower hemoglobin, hematocrit, and ferritin levels. Given that half of AAW reported heavier menses, and that an association between personal assessment of menstrual bleeding and subjective and objective measures of anemia was found, AAW with heavy bleeding should be encouraged to seek clinical evaluation.

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C133

Title: Subarachnoid Hemorrhage in the ED: A Systematic Review and Meta-Analysis of Diagnostic Accuracy in History, Physical Exam Findings, and Testing

Background: Acute subarachnoid hemorrhage (SAH) is a rare, but serious etiology of atraumatic headache (HA) in emergency department (ED) patients.

Objectives: To conduct a systematic review and meta-analysis of history, physical exam, imaging studies, and lumbar puncture (LP) results for adult ED patients presenting with acute, atraumatic HA suspicious for SAH.

Methods: We conducted a systematic review/meta-analysis of studies reporting data on ED HA patients with suspected SAH where 2x2 tables could be constructed. We searched 1966 -- 2012 in PUBMED, EMBASE, SCOPUS and additional studies were searched in research abstracts from five EM and neurology journals. QUADAS-2 was used to assess study quality and bias. When ≥ 2 similar studies were identified, meta-analysis was conducted using Meta-DiSc. Outcomes were summary sensitivity, specificity, and positive and negative likelihood ratios (LR+ and LR-).

Results:In 3,274 citations, 126 underwent full text-review; 16 studies were included. Across studies, SAH definitions were highly variable, specifically how positive LP was defined. Clinical follow-up and success rates varied considerably. In QUADAS-2, study quality was variable; however, most had a relatively low-risk of biases.

Meta-Analysis of Diagnostic Accuracy

	Test/Finding	Sensitivity	Specificity	LR+ (95% CI)
Test	Non-contrast CT	0.94	1.00	277.68 (37.51-2055.81)
	CSF Xanthochromia	0.74	0.81	6.64 (1.63-27.06)
History	Stiff Neck	0.66	0.70	2.55 (1.54-4.22)
	Exertion at Onset	0.30	0.89	2.03 (1.53-2.68)
	Nausea	0.60	0.55	1.22 (0.91-1.64)
	Vomiting	0.61	0.73	1.64 (0.89-3.04)
	Photophobia	0.16	0.79	1.08 (0.52-2.24)
	Blurred Vision	0.11	0.96	3.65 (0.24-54.75)
	Exploding	0.29	0.66	1.28 (0.89-1.83)
	Onset Instantaneous	0.63	0.44	1.12 (0.81-1.54)
	Onset 2-60 seconds	0.23	0.73	1.08 (0.47-2.47)
	Onset 1-5 minutes	0.07	0.86	0.26 (0.01-6.26)
Physical Exam	Unconscious	0.17	0.96	3.78 (2.51-5.71)
	Focal Neuro Deficit	0.37	0.91	3.13 (1.63-6.02)
	Altered Mental Status (AMS)	0.25	0.91	2.22 (1.35-3.65)
	Nuchal Rigidity	0.30	0.94	2.53 (0.24-26.68)
	Male	0.44	0.29	0.89 (0.62-1.27)
	Female	0.57	0.41	1.03 (0.83-1.26)

Conclusion: Non-contrast head CT is highly sensitive for SAH and has perfect specificity. Certain history and physical exam findings are more suggestive including unconsciousness, AMS, focal neuro deficits, nuchal rigidity, blurred vision, and exertion at onset; however none are sufficiently specific to rule out SAH.

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C134

Title: Prevalence and Characteristics of Adnexal Masses at an Inner-City Public Hospital

Objective: To describe the prevalence and characteristics of adnexal masses found in women presenting to an urban county hospital.

Sample: 621 women who underwent surgery for adnexal masses between July 2006 and July 2011 at John H. Stroger Hospital. 540 women met inclusion criteria.

Methods: A retrospective chart review of women who underwent surgery for adnexal masses at John H. Stroger Hospital in Chicago, IL was performed between July 2006 and July 2011. Institutional Review Board approval was obtained. Chi-square tests were used for statistical analysis. P-value <0.05 was considered significant.

Results: Overall, 621 patients underwent surgery for adnexal masses during the study period and 540 met inclusion criteria. Mean age was 44.7 +/- 13.3 years (mean +/- SD). The majority of patients were Hispanic (203/540, 37.6%) or African American (160/540, 29.6%). Two-thirds (359/540, 66.5%) of patients were premenopausal. The most common presenting symptom was abdominal pain (425/540, 78.7%). Over two-thirds (376/540, 69.6%) of masses were unilateral and the majority (464/540, 85.9%) of masses were complex on imaging. The average size of adnexal mass on preoperative imaging was 10.8 cm +/- 6.2 cm (mean +/- SD) with a range of 1.1 cm to 40 cm. Surgical management included both laparoscopic and abdominal approaches. Approximately two-thirds (369/540, 68.3%) of adnexal masses were benign, with the most common tissue diagnosis being mature teratoma. Malignancy was diagnosed in nearly one-third of patients (171/540, 31.7%) with nearly one-half of cases (83/171, 48.5%) occurring in premenopausal women. Preoperative characteristics such as tumor size (P<0.0001), tumor morphology (P<0.0001), ascites (P<0.0001), and CA125 levels (P<0.0001) were independently associated with malignancy. The presence of omental caking or lymphadenopathy on preoperative imaging was not significantly associated with malignancy at time of surgery.

Conclusions: Nearly one-third of women presenting with adnexal masses to an urban public hospital have malignant disease. Malignant adnexal masses were identified more frequently in premenopausal women compared to national cancer statistics. Further studies should focus on preoperative evaluation in this population and its role in influencing referral patterns in women presenting with adnexal masses in resource poor settings.

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C135

Title:

Analysis of Emergency Department Consultation Times

Objectives:

Emergency medicine physicians seek specialist consultation on many of their complex patients but this consultation adds time to the emergency department (ED) evaluation. The goal of this project was to measure consultant times in the NMH ED.

Methods:

Using an innovative time-stamp tool on RedCap, a secure HIPPA-compliant online survey system, emergency medicine (EM) physicians logged the times of specialist consultation request, response, evaluation of the patient, and communication of final plan to the EM team. A total of 56 consults were logged over a six-week period in a convenience sample. Primary outcomes were response time (time from initial page to first response), total consultation time (time from initial page to final plan) and decision-making interval (time from first response to final plan).

Results:

Mean response time was 15 minutes (95%CI 11 to 19). Mean total consultation time was 134 minutes (95%CI 111 to 156). Mean decision-making interval was 119 minutes (95%CI 96 to 141).

We also compared surgical consults (General Surgery, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedics, Transplant Surgery, Trauma Surgery, Urology and Vascular Surgery) versus non-surgical consultants (Cardiac Intensive Care, Gastroenterology, Medical Intensive Care and Neurology). No statistically significant difference was observed between surgical and nonsurgical consults in response time ($p=0.98$), total consultation time ($p=0.11$), or decision-making interval ($p=.10$). However, the data showed trend toward a difference in total consultation time (mean 147 minutes vs. 109 minutes) and decision-making interval (mean 132 minutes vs. 94 minutes).

Conclusions:

Mean total consultation time was greater than 2 hours. Surgical consults showed a trend toward longer total consultation time and decision-making interval and further analysis with a larger sample size might indicate a statistically significant difference.

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C136

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Title: **Prognostic Utility of Global Longitudinal Strain for Cardiovascular Admissions over 4 Years of Follow-up**

Summary

Global longitudinal strain measured by 2D speckle tracking echocardiography (GLS) from baseline images has been shown to have similar diagnostic utility for obstructive and non-obstructive coronary artery disease (CAD) as wall motion score index (WMSI) from the stress echocardiogram. The prognostic utility of GLS is less well understood, specifically whether GLS can predict the requirement of future cardiac care.

Objective

This study seeks to determine the prognostic value of GLS for predicting cardiovascular hospitalizations or repeat cardiac testing in patients who have undergone angiography over 4 years of follow up when compared to WMSI.

Sample

This retrospective cohort study included 122 consecutive patients (72 males, 50 females, average age 59.7 years) who underwent coronary angiography within 3 months of stress echocardiography (average 5.5 days).

Methods:

GLS was determined using GE EchoPac software. The composite endpoint included hospital admissions/emergency room visits for cardiac causes and repeat cardiac testing (angiography, stress echocardiogram, or nuclear stress test). Outcomes were determined through review of patient medical records and patient telephone interviews. Data was analyzed using a Kaplan-Meier survival analysis and compared using the Gehan-Breslow-Wilcoxin test with a significance level of p=0.05.

Results:

Patients were followed for an average of 2.6 years. 35 patients (29%) experienced the composite event. Patients with abnormal GLS (GLS > -16.77%) experienced a significantly shorter time to composite event that those with normal GLS (p = 0.0011). In addition, patients with abnormal WMSI also experienced a significantly shorter time to composite event than those with normal WMSI (p = 0.0093).

Conclusions:

In a cohort of patients who underwent coronary angiography following a stress echocardiogram, abnormal GLS obtained from baseline images predicted a greater likelihood and a shorter time to first cardiovascular hospitalization or repeat cardiac testing, and was similar to abnormal WMSI.

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C137

Title: Ischemia Related Changes in Circulating Endothelial Progenitor Cells and Associated Clinical Characteristics in Peripheral Artery Disease

Summary: Individuals with lower extremity peripheral artery disease (PAD) have greater functional impairment, faster functional decline, and higher rates of cardiovascular events than people without PAD. Growing evidence suggests that circulating endothelial progenitor cells (EPCs) repair damaged endothelium in patients with cardiovascular disease. Basic and animal research show that bone marrow–derived and tissue-resident EPCs migrate to sites of ischemic and endothelial damage where they differentiate into mature endothelial cells, repair damaged endothelium, and promote new blood vessel formation

Objective: We determined whether lower leg ischemia, induced by treadmill walking exercise in individuals with PAD acutely increases levels of EPCs in the peripheral circulation. We also determined whether greater surges in circulating EPCs in response to treadmill exercise were associated with better functional performance in PAD.

Methods: EPC levels were measured by flow cytometry before and immediately after a treadmill stress test in 24 participants with PAD and in 19 participants without PAD.

Results: Compared to participants without PAD, participants with PAD had greater percent increases in $CD34^{+}CD45^{lo}$ EPCs (0.08% ±0.20 vs. -0.06%±0.08, p=0.007), $CD34^{+}CD45^{lo}CD133^{+}$ EPCs (0.08% ±0.24 vs. -0.08%±0.13, p=0.014), $CD34^{+}CD45^{lo}CD31^{+}$ EPCs (0.10±0.20 vs. -0.06±0.09, p=0.002), and $CD34^{+}CD45^{lo}ALDH^{+}$ EPCs (0.17±0.27 vs. -0.05±0.14, p=0.033) immediately following the treadmill stress test. PAD participants whose EPCs increased immediately after treadmill walking exercise had lower baseline ABI values (0.65±0.17 vs. 0.90±0.19, p=0.004) and shorter treadmill times to onset of ischemic symptoms (2.17±1.54 vs. 5.25±3.72 minutes, p=0.012) compared to PAD participants whose EPCs did not acutely increase after treadmill walking exercise.

Conclusion: Among people with PAD, treadmill exercise induced lower extremity ischemia is associated with acute increases in circulating EPCs. More severe PAD is associated with a higher prevalence of EPC surge in response to lower extremity ischemia. Further study is needed to establish the prognostic significance of this phenomenon among patients with PAD.

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C138

Title: Outcomes of an Enhanced Surveillance Program for Carbapenem-Resistant Enterobacteriaceae (CRE)

Background:
There has been an alarming increase in CRE in both acute and long-term acute care hospitals (LTACH). Optimal surveillance strategies for identifying patients colonized with and at risk for transmitting CRE are urgently needed.

Objective:
We studied two strategies to control the spread of CRE: 1.) enhanced screening of patients with epidemiologic links to unrecognized CRE colonized or infected patients (ring surveillance, RS), and 2.) improving CRE culture detection (culture validation, CV). We also identified risk factors associated with transmitting CRE.

Methods:
Hospitalized patients with CRE cultures between Sep 2011 and Jan 2013 were included. In the RS study, new CRE patients not on contact precautions triggered rectal surveillance of all patients on the same ward. In the CV study, two rectal swabs were obtained from patients already on contact precautions with new CRE cultures. One swab was plated directly on vancomycin, amphotericin B, ceftazidime, and clindamycin (VACC) plates with ertapenem resistance confirmed by the Kirby-Bauer disk diffusion method. The other swab was inoculated in ertapenem-enriched media (EEM) prior to plating. Polymerase chain reaction for the *Klebsiella pneumoniae* carbapenemase gene and pulsed-field gel electrophoresis (PFGE) were performed as indicated. Patient charts were reviewed and clinical characteristics and outcomes recorded.

Results:
Patients with CRE had significant prior healthcare and antibiotic exposure and an overall hospital mortality of 24%. RS occurred 14 times included 173 patients and identified two new CRE colonizations. One patient was negative during RS triggered by a patient with carbapenem-resistant *Klebsiella pneumoniae* (CRKP), however 22 days later had a positive culture for CRKP that was closely related by PFGE. In addition, seven other new CRE positive patients shared time on wards with CRE positive patients outside of the timeframe of RS. PFGE typing confirmed two possible transmissions in this group. In the CV study, the sensitivity of direct plating on VACC plates compared with inoculation in EEM was 94% vs. 100%, while the specificity was 100% vs 99%.

Conclusions:
Ring surveillance can identify unrecognized CRE colonized patients and reveal possible transmissions but is limited by only capturing transmissions that occur during one defined timeframe. Inoculation of rectal swabs in EEM prior to plating increases the sensitivity of detecting CRE.

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C139

Title: Longitudinal neuroanatomic and cognitive trajectories in schizophrenia

Summary: Schizophrenia is a neurobiological disorder associated with abnormalities in brain structure that have shown to progress over certain phases of the illness. Cognitive dysfunction is another consistent feature that is increasingly being conceptualized as a core factor in the expression of the disease. The exact longitudinal course of these features continues to be a focus of inquiry as their relationship may hold clues to the nature of the behavioral and pathophysiological process of schizophrenia.

Objective: The overall aim of this study was to understand the relationship between longitudinal courses of neuroanatomical decline and cognitive/clinical stability in schizophrenia.

Sample: Clinical, neuropsychological and MRI structural data were collected from a sample of schizophrenia (n=30) and healthy subjects (n=26) at baseline line (T1) and 24 month follow-up (T2) time points.

Methods: Surface-based cortical thickness mapping using a General Linear Model was utilized to determine the differences in cortical thickness between groups. The resulting cortical thickness map from T2 was then utilized to create a region of interest (ROI) for longitudinal analysis using Repeated Measures ANOVA.

Results: Results revealed significant thinning of the cortical mantle for the schizophrenia group relative to healthy subjects at both time points. Differences in thinning across time were also observed, with areas of the precuneus and superior frontal gyrus demonstrating significant group-by-time interactions indicating greater rates of thinning in these regions. The cognitive profile of the schizophrenia group, while significantly impaired relative to healthy participants, did not evidence any effect for time.

Conclusions: Results from this study suggest longitudinal trajectories of neuroanatomic and clinical/cognitive changes vary and are not linked in a consistent manner. Whether a direct relationship between these constructs exists, or secondary factors are the mechanism of change is unclear. Further exploration would focus on these relationships at different illness stages.

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Title: Mapping Missing Heritability in PCOS: Developing Interpretive and Validation Methodology for Identifying the Contribution of Rare Variants to PCOS

Summary and Objective: PCOS is a highly heritable non-Mendelian disorder. As in other complex genetic diseases, common susceptibility variants mapped by genome-wide association studies do not account for all of the observed heritability. Uncommon (MAF<5%) or rare (MAF<1%) variants with larger biological effects may account for this "missing heritability". This hypothesis is testable using next generation sequencing technologies. We present a workflow for identifying deleterious variants through two complementary approaches: case-control and family-based.

Sample: Whole genome sequencing at a depth of 40x was performed on 77 PCOS probands diagnosed by NIH criteria and their parents (69 fathers, 71 mothers), affected sisters (13 PCOS, 4 elevated androgens with regular menses) and unaffected sisters (UA, 77). The case-control analysis included 77 probands and 62 UA sisters with highest BMIs. Using bioinformatics tools from Complete Genomics Incorporated (Mountain View, CA), 20,297,703 high quality variants were identified in the study subjects.

Methods: In the case-control analysis, 396,833 exonic (+/-5bp) variants (Galaxy, Penn State University and Johns Hopkins University) were annotated with ANNOVAR (Biobase, Wolfenbüttel, DE). After removal of 52,048 synonymous variants, 66,077 non-synonymous single nucleotide variants, 4,385 frame-shift substitutions, 1,756 frame-shift deletions, 12,894 non-frame-shift insertions, 1,150 non-frame-shift deletions and 1,138 stop-codon mutations remained. Assessment of the damaging potential of these mutations, excluding frame-shifts, using bioinformatic tools (SIFT and Provean [J. Craig Venter Institute, San Diego, CA]; PolyPhen2 [Harvard University, Cambridge, MA]) identified 1,432 deleterious variants mapping to 1,268 genes.

Results: In the analysis of 10 multiplex PCOS families (≥2 affected and ≥1 UA sister), 1,166 variants from 979 genes were identified. Of these variants, 1,149 were also found in the case-control data, 48 of which were deleterious. There were 153 variants from 126 genes found in 2 or more families. Ten of these variants (localized to 9 genes) were identified as damaging by all three tools (implemented using Golden Helix *SNP & Variation Suite v7.x;* Bozeman, MT).

Conclusions: Genes identified in the case-control and family-based analyses will be re-sequenced by Sanger sequencing to confirm putative deleterious mutations. The biologic impact of the confirmed mutations will be investigated in appropriate cell systems or transgenic animal models. Any mutations thus identified will provide considerable insight into the etiology of PCOS since they are predicted to be physiologically relevant.

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C141

Title: 24-Hour Core Body Temperature is Lower in Postmenopausal Women than Premenopausal Women: Potential Implications for Energy Metabolism and Mid-Life Weight Gain

Background: In the United States, obesity prevalence increases significantly with age for women but not men.[1] Weight gain during perimenopause may account for some of the observed sex difference. It is controversial whether the weight gain that occurs is a result of changes in metabolism related to aging itself or to the hormonal changes of menopause. Body temperature is an understudied variable linked to metabolism. It is estimated that a 1°C change in body temperature produces a 10-13% change in energy expenditure. Recent data suggests that oral temperature declines abruptly around age 50-59 in women with no further decline later, whereas men experience a gradual decline from mid-life onward.[2] There are no known studies of core body temperature in pre- and post-menopausal women. We hypothesized that core temperature would be lower in postmenopausal women, due to lower progesterone levels.

Methods: Data were obtained from two related studies of core temperature conducted by the same investigators using the same methods. Study 1 included lean and obese adults, ages 25-40. Study 2 included overweight and obese men and postmenopausal women, ages 18-65. Sample size from the combined studies was 23 men and 25 women (12 premenopausal, 13 postmenopausal). Subjects were studied during an admission to the Clinical Research Unit. Premenopausal women were studied during the follicular phase of the menstrual cycle. Core body temperature was measured every minute for 24 hours (CorTemp System,HQ Inc.). Subjects' activities were standardized and included periods of rest, food consumption, exercise, and sleep. Resting energy expenditure (REE) was measured by indirect calorimetry. Body composition was measured by DEXA.

Results: Mean 24 hour core body temperature was 0.25 ± 0.06 °C lower in postmenopausal women than premenopausal women ($p=0.001$). Mean core temperature during sleep was 0.28 ± 0.08 °C lower in postmenopausal than premenopausal women ($p=0.002$), and similar differences were found during mealtime and after exercise (all $p< 0.05$). Mean 24 hour core temperature was 0.34 ± 0.05 °C lower in men than in premenopausal women ($p<0.001$), with similar differences found during sleep, mealtime, and exercise (all $p < 0.01$). Mean core temperature was not different between postmenopausal women and men. There was a significant correlation between age and 24 hour core temperature for women ($r=0.615$, $p=0.001$) but not for men in our cohort under age 65. There was no correlation between core temperature and adjusted REE (kcal/kg).

Conclusions: In this analysis, postmenopausal women, like men, have lower core body temperatures than premenopausal women. If confirmed in future studies, this reduction in core temperature may be driven by a reduction in progesterone levels during the menopausal transition. Although exploratory in nature, these findings may have implications for energy metabolism in perimenopausal women.

[1] Ogden CL, Carroll MD, Kit BK, Flegal KM. NCHS Data Brief. 2013 Oct;(131)1-8.

[2]Waalen J,Buxbaum JN. J Gerontol A Biol Sci Med Sci. 2011 May;66A(5);487-492.

C142

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Title: Femoral Component Rotation in Total Knee Arthroplasty: A MRI-Based Evaluation

Summary: A prospective study design was utilized to assess the relationships of bony landmarks used during total knee arthroplasty and to determine if the relationships were influenced by degree of pre-operative coronal deformity, gender, degree of coronal plane deformity, or direction of coronal plane deformity. Results showed that the bony landmarks are not related in the manner conventionally believed and that one of those landmarks is more internally rotated in females and valgus knees.

Objective: Proper femoral component rotation is a crucial factor in successful total knee arthroplasty (TKA). Rotation using anatomic landmarks has traditionally referenced the transepicondylar axis (TEA), Whiteside's Line (WSL), or the posterior condylar axis (PCA). TEA is thought to best approximate the flexion-axis of the knee, however WSL or PCA are surrogates commonly used in the operating room. Classic studies have suggested that the TEA is perpendicular to WSL and 3 degrees externally rotated to the PCA, however these studies have been limited in power. The aim of this study was to use magnetic resonance imaging (MRI) based planning software to assess the relationship of WSL and PCA to the TEA and to determine if the relationships were influenced by the magnitude of pre-operative coronal deformity.

Sample: Inclusion criteria included any patient who had primary TKA performed for osteoarthritis by one of three surgeons between January 2010 and February 2012. The patients had a pre-operative MRI**.** Exclusion criteria included patients who did not have an MRI preoperatively or underwent conventional total knee arthroplasty without the use of patient specific instrumentation. Patients with prior femur fracture, rheumatoid arthritis, or frank hip dysplasia were also excluded.

Methods: 560 total knee replacements were performed in 510 patients. Preoperative planning software was utilized to determine the rotational relationships of TEA, WSL, and PCA. The coronal plane deformity in each patient was evaluated using an MRI-based planning software.

Results: WSL is externally rotated by 90.36 degrees (SD 2.3) and PCA is internally rotated by 2.38 degrees (SD 1.6) compared to the TEA ($p<0.001$). The relationship of WSL to TEA has more variability than PCA to TEA. In the overall population, only 77% of WSL- and 74% of PCA-based resections will be within 2 degrees of the TEA. Resection based on PCA is more likely to be within 3 degrees of the TEA than resection perpendicular to WSL ($p<0.001$). The PCA is more internally rotated in females and in valgus knees ($P<0.001$), however it is unaffected by the degree of valgus deformity ($p = 0.211$).

Conclusions: Advanced imaging can assist surgeons in assessing options for femoral component rotation in TKA. Our data indicates that the relationships of axis options and historical assumptions may need to be reassessed as imaging technology advances.

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C143

Title: Core Strengthening Class Improves Post-Partum Recovery of Core Abdominal Muscles in Women with Rectus Diastasis

Summary: This is a prospective cohort study of post-partum women participating in a 6-week core strengthening class. We used musculoskeletal (MSK) ultrasound (US) to observe the resting state of the lateral wall abdominal muscles, transversus abdominus (TrA) and internal obliques (IO) that contribute to core strength. Rectus diastasis (RD) is a common sequela of pregnancy and is associated with decreased strength of trunk rotators, leading to an increased association with peripartum low back pain.[1] This prospective study observed the effects of a core strengthening class in the resting thickness of the lateral abdominal wall muscles in women with and without RD.

Objective: To determine if the presence of RD affects the resting AP thickness of the TrA and IO before and after a 6-week core strengthening exercise program in post-partum women.

Sample: 34 post-partum women, ages 18-45, who were enrolled in a 6-week core strengthening class.

Methods: Midline palpation of the abdomen was done to confirm the presence of RD. MSK US was placed on all subjects' lateral abdominal walls bilaterally at a standardized location. Static screen shots of the MSK US image were taken at the beginning and the end of a 6-week core strengthening class. The greatest AP distances of the TrA and IO muscles were measured from the static images.

Results: The mean AP thickness of the right TrA was 3.0mm for both women with and without RD at first class, then 3.1mm for both groups at last class. The percent change of resting thickness from the beginning to end of the class was .028 for +RD group and .076 for -RD group (P = .463). For the left TrA, initially, the mean thicknesses were 3.0mm (+RD) and 2.9mm (-RD), then 3.2mm (+RD) and 3.3mm (-RD) at final class. Percent changes were .075 and .146 in women with and without RD, respectively (P = .345). The mean thicknesses for right IO were 6.3mm (+RD) and 6.6mm (-RD) initially and at final evaluation were 6.3mm and 6.8mm, respectively; the percent changes were .035 (+RD) and .031 (-RD) (P = .928). The same values for left IO were 6.7mm (+RD) and 6.0mm (-RD) initially and then 6.4mm (+RD) and 6.3mm (-RD) with percent changes being .040 and .044 (P = .958).

Conclusions: Both women with and without RD improved their resting thickness of TrA and IO after a 6-week core strengthening class. There were no statistically significant differences between the groups. Despite conventional belief that women with RD have increased difficulty maintaining core strength, this study demonstrates that core strengthening can equally improve the resting thickness of TrA and IO in post-partum women with and without RD. These results may reassure women with persistent RD after delivery that they are not at a disadvantage as long as they participate in post-partum core strengthening exercises.

1. Liaw L, Hsu M, Liao C, Liu M, Hsu A. The relationships between inter-recti distance measured by ultrasound imaging and abdominal muscle function in postpartum women: a 6-month follow-up study. J of Ortho & Sports Phy Ther 2014;41(6):435-43.