Greenville Health System and Palmetto Health are becoming PrismaHealth.org

Why Prisma Health?
Since we launched our new health organization last November, we have made great progress by building on the strength and legacies of Greenville Health System and Palmetto Health. Together, we are looking at health in a completely new way.

In early 2019, we will unite under one name, one logo and one way of delivering health care.

Because the name Prisma Health is unique, we can make it our own. Our bold, fresh visual identity includes sharp angles and bright, vibrant colors that distinguish us from traditional health care providers in our region. The design of the letters is intentional and engaging, evoking the facets of a prism. The name and logo reflect the multifaceted, dynamic organization we are today, and light the way for all we are becoming.

What stays the same?
We will continue to honor the sacred relationships our patients and their families have with their physicians and advanced practice providers. Your doctor won’t change. Your hospital won’t change. Your physician practice will stay the same, too. Only our company names and logos will change to reflect our new unified organization.

We continue to be dedicated to transforming health care through education and clinical research. Collaborating with our academic partners, we are teaching the next generation of physicians, nurses, dentists and other medical professionals, and investing in research to improve the lives of those we serve.

And we continue our commitment to keep health care local. By coming together as one, we’re shaping our own future so we may continue to improve the health of all South Carolinians.

What’s our promise?
*Inspire health. Serve with compassion. Be the difference.*

Our 30,000 team members are dedicated to supporting the health and well-being of you and your family. To learn more about how we will serve you, visit PrismaHealth.org.
The peer-reviewed journal of Greenville Health System

Vision: To transform health care through the publication of relevant, innovative, and multidisciplinary scholarship concerning advancements in clinical, academic, and translational research

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**About the 2018 Research Showcase**

The 2nd Annual Research Showcase, presented by GHS Health Sciences Division of Research and Scholarship, took place April 13 at GHS Greenville Memorial Hospital. This event promotes translational research activities and collaborative work with the system and its three primary academic partners: Clemson University, Furman University, and the University of South Carolina. More than 75 posters were accepted for display. Awards were presented in several categories, which can be found on Page 23.

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**On the Cover**

Clemson University Nursing building opened August 2018 on Greenville Memorial Medical Campus. In the foreground is the building’s connector to University of South Carolina School of Medicine Greenville.

Photo by Kris Decker/Firewater Photography

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Special Article

Factors Affecting Salvage Rate of Infected Prosthetic Mesh
Hamza Abbad, Benjamin Hancock, William Cobb, Alfredo Carbonell, and Jeremy Warren

Prosthetic mesh infection (PMI) is a challenging complication after ventral hernia repair (VHR). No clear optimal treatment strategy exists, leaving only experience and judgment to guide surgical decision making.

Retrospective review of patients with PMI was performed. Subsequent abdominal operation (SAO) constitutes any intra-abdominal operation occurring after the index hernia repair prior to PMI presentation. Any mesh removal was considered salvage failure. Analysis was performed using Chi-square test, Fisher’s exact test, or Mann-Whitney U test.

We identified 165 instances of PMI. Most cases (60%) involved intraperitoneal mesh. Thirty-eight percent of patients had an SAO, 64.1% of which were CDC wound class 2, 3, or 4; 67.2% involved intraperitoneal mesh. Enteroprosthetic fistula was found in 15.2% of cases. Mean time to presentation was 17 months after index hernia repair or SAO for infection alone and 54 months when a fistula was present (P = .015).

Macroporous polypropylene mesh was salvaged in 66.7% of cases overall and 72.7% when positioned in an extraperitoneal space. Mesh salvage was not possible in any case involving composite or PTFE mesh and rarely for microporous polypropylene (7.7%), multifilament polyester (5.9%), or intraperitoneal mesh (6.1%). Closure of the defect after mesh removal, with or without component separation or mesh reinforcement, significantly lowers recurrence rate (P < .001).

PMI involving composite, PTFE, multifilament polyester, or microporous polypropylene mesh requires explantation. Infected macroporous polypropylene mesh in an extraperitoneal position is salvageable in most cases. Risk of secondary mesh infection after SAO, particularly with intraperitoneal mesh, should be considered during index VHR.

Volumetric Analysis of Patients Undergoing Abdominal Wall Reconstruction After Preoperative Progressive Pneumoperitoneum
John Allen, Jeremy Warren, and Joseph Bittle

Introduction: Preoperative progressive pneumoperitoneum (PPP) is a method of increasing abdominal cavity volume prior to repair of massive incisional hernias with loss of abdominal domain (LOD). We hypothesize that the increase in abdominal cavity volume after PPP is adequate to accommodate the initial hernia contents.

Methods: Retrospective review of all PPP patients over a 10-year period was performed. Volumetric analysis was conducted before and after PPP as described previously. The accommodating volume (AV) was defined as the abdominal cavity volume (ACV) – (pre-PPP ACV + pre-PPP hernia sac volume). Primary outcomes were AV, change in length, and abdominal wall musculature. Secondary outcomes were length of stay, surgical site occurrence, surgical site infection, recurrence, and readmission.

Results: Twenty-nine patients underwent PPP. Mean hernia width was 18.6 cm, with an ACV:HSV ratio of 40%. Mean time of PPP was 7.7 days. Mean increase of ACV after PPP was 3.3 L with
mean AV of 0.37 L. All repairs were open with the majority having mesh in retromuscular position (75.9%). Average increase in oblique muscle complex length and rectus muscle width was 2.57 cm and 1.04 cm, respectively.

Fascial closure was achieved in 65.5% of cases. The AV significantly impacted fascial closure, with a mean AV of 1.1 L when fascial closure was achieved and -1.6 L when closure was not achieved. Similarly, increasing hernia width impacted closure, with a mean width of 24.2 cm in those unable to be closed and 15.6 cm when closure was possible. Complications included SSO in 48% of patients, SSI in 27.6%, and SSO requiring intervention in 71.4%. Recurrence was 24.1% with mean 26.7-month follow-up.

**Conclusion:** Patients with loss of domain benefit from PPP by increasing ACV and lengthening abdominal wall musculature to accommodate initial herniated contents. Greater hernia width, ACV:HSV, and AV predict ability to close fascia.

### Assessing Barriers to Implementing Shared Decision Making

Alexa Bianchi, Brittany Crum, and Meenu Jindal

Shared decision making (SDM) is a highly valued method of patient-centered care, but extensive studies show a surprisingly lower rate of implementation than expected with such an effective model. We are curious about what is preventing physicians from interacting with their patients using a SDM approach specifically at our internal medicine clinic at Greenville Memorial Hospital (GMH).

Internal medicine residents at GMH were invited to fill out a presurvey that subtly assessed their knowledge of SDM. Residents then listened to a lecture on SDM and took a posttest to reassess their actual implementation of SDM and perceived barriers to implementing this type of patient-physician interaction.

Residents were found to highly value SDM but did not implement it as much as expected. They reported time, patient education, and lack of efficient decision-making aids as the biggest barriers to implementing SDM.

With these barriers defined, our next step is to create a shared decision-making aid for one of the more difficult and time-consuming physician-patient discussions we see in our clinic: colonoscopies. The interactive in-office decision aid will easily outline the disease, risks, benefits, procedure, and other pertinent aspects of colonoscopies so that the patient can read and formulate questions before seeing the physician. Our intention is to save time and increase patients’ understanding and investment in their health.

The global impact on health will benefit patients in low health literacy populations who can begin to understand more about their health, leading to increased patient adherence, enhanced patient-physician rapport, and decreased medical costs.

### Early Warning Response System in GHS School-Based Health Centers: Connecting Students to Mental Health Care and Social Supports

Holly Bryan, Laura Rolke, Sarah Griffin, Jacqueline Forrester, Laura Johnson, and Kerry Sease

Greenville Health System (GHS) has partnered with the United Way to establish 4 School-Based Health Centers (SBHCs) in high-poverty neighborhoods. SBHCs provide a unique opportunity to reach adolescents in an accessible setting.

High-risk students are identified through the Early Warning Response System (EWRS). EWRS is a real-time data dashboard that monitors attendance, behavior, and grades. Each EWRS student is recommended to be referred for a SBHC appointment. A comprehensive assessment (eg, HEADSS, PHQ2) is completed to determine well-being and screen for risks associated with social determinants of health. While the SBHCs do treat acute illness and manage chronic conditions, the service...
targets students at highest risk for dropping out to better understand what is happening in their lives socially and emotionally. The purpose of this study was to identify how many SBHC visits were completed by EWRS students, the number of screenings, and the result of these screenings. Chart abstraction and analysis revealed 784 SBHC visits during the 2016-2017 school year, 20% of which were EWRS referrals. A total of 94% were provided a screening, and 88% revealed complicated physical, emotional, behavioral, or social health concerns. Students were connected to services (eg, insurance) and outside care (eg, medical homes and specialists). Of all students seen by the SBHC, 94% were able to return to class. SBHCs are able to help those students most at risk of dropping out and intervene to more effectively address the underlying issues contributing to presenting physical ailments, poor school performance, and behavior.

**Beyond Bates: Advanced Physical Exam Series for Medical Students**

Ryan Dean and Steven Connelly

**Purpose:** To develop a curriculum for medical students that teaches proper technique and choice of both routine and advanced physical exam maneuvers as they relate to medical decision making in clinical practice.

**Methods:** A 2-week pilot course was created in partnership with the University of South Carolina School of Medicine Greenville. JAMA Rational Clinical Examination and the Evidence-Based Physical Diagnoses were used to develop the curriculum focusing on various topics relevant to internal medicine. Both faculty and residents assisted in leading the course.

**Results:** Five fourth-year medical students enrolled in the pilot course. A 21-question precourse assessment and a 20-question postcourse assessment were administered.

Precourse average: 12.4/21 points (59.1 ± 12.9%). Postcourse average: 16.8/20 points (84.0 ± 11.4%). All students demonstrated an improvement in their percent score by 25 ± 10.6%. An oral final assessment was developed with 4 clinical scenarios using the Greenville HealthCare Simulation Center. Grading was based on five clinical categories.

Average oral score: 34.8 out of 40 points (87 ± 8.9%).

Students provided feedback explaining that the afternoon physical exam rounds were most helpful for learning. Students requested more structured teaching on maneuver technique.

**Conclusion:** After participating in the pilot course, students demonstrated improved knowledge and implementation of the physical exam for clinical decision making and cost-effective care. Results from the pilot will be used to improve a follow-up course that has already been expanded to include 8 students.

**Antibiotic Irrigation of the Surgical Site Decreases Incidence of Surgical Site Infection After Open Ventral Hernia Repair**

Lily Fatula, Allison Foster, Hamza Abbad, Joseph Ewing, Ben Hancock, William Cobb, Alfredo Carbonell, and Jeremy Warren

**Purpose:** Antibiotic lavage of the surgical field before abdominal wall closure has been shown to lower the incidence of both intra-abdominal and soft-tissue SSI. We hypothesize this combination decreases incidence of surgical site infection (SSI) after open ventral hernia repair (OVHR).

**Methods:** Retrospective review of OVHR with mesh at a single high-volume center (Greenville Health System Hernia Center) from 2008-2017 was performed. All patients were repaired in an open fashion with mesh, primarily in the retromuscular space. Three groups were identified: (1) patients receiving no antibiotic irrigation (Group 1); (2) gentamicin (G) alone (Group 2); or (3) G + clindamycin (C) irrigation (Group 3). Analysis was completed using Chi-square or Fisher’s exact test
(for n < 5), ANOVA, or Kruskal-Wallis test, and, finally, logistic regression to determine the effects of irrigation on SSI.

**Results:** We identified 852 patients undergoing OVHR. No irrigation was used in 260 patients, G alone was used in 266 patients, and G + C was used in 299 patients; 27 patients were excluded because of different antibiotic regimens. Incidence of SSI was also significantly lower after G + C irrigation, but not G alone (Group 1, 16.5%; Group 2, 15.4%; Group 3, 5.0%; P < .001).

Multivariate logistic regression demonstrated significantly increased SSI with contaminated wounds (OR 4; 95% CI 2.0-8.2), dirty wounds (OR 6.3; 95% CI 2.9-13.4), and COPD (OR 4.1; 95% CI 2.4-6.9), as expected. Use of G + C was an independent predictor of decreased SSI (OR 0.29; 95% CI 0.14-0.58).

**Conclusion:** Irrigation with a combined G + C antibiotic irrigation significantly reduces the incidence of SSI following OVHR with mesh.

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**Geographic Variation in the Treatment of Proximal Humerus Fracture in the Medicare Population**

Sarah Floyd, Joel Campbell, Charles Thigpen, Mike Kissenberth, and John Brooks

**Purpose:** Conservative management has become the preferred initial course of treatment for patients with proximal humerus fracture (PHF); however, surgical management rates vary widely across the country. The objective of our study was to evaluate local area treatment variation in managing acute PHF.

**Methods:** This was a retrospective cohort study of Medicare patients diagnosed with PHF in 2011. Patients receiving reverse shoulder arthroplasty, hemiarthroplasty, or open reduction internal fixation within 60 days of their PHF diagnosis were classified as surgical management patients. Area treatment ratios at the hospital referral region (HRR) level were calculated as the ratio of the number of patients in the HRR who received surgical treatment over the sum across these patients of their predicted probabilities of receiving surgical treatment.

**Results and Summary:** Among patients with PHF (N = 77,053), 15.0% received surgery and 85.0% received conservative management. Patients who were older, had more medical comorbidities, were male, nonwhite, or dual-eligible for Medicaid were less likely to receive surgery (P < .0001).

Surgery rates varied from 6.3% to 25.6% across all HRRs, with variation in South Carolina ranging from 11.5% to 21.2%.

**Applicability to Health Care:** Given the heterogeneity of treatment effects, it is possible that variation in surgery rates may represent appropriate care in local areas. Alternatively, higher surgery rates may reflect an overuse of surgical treatment that does not result in improved outcomes for patients. Future analysis will assess the association between higher surgical rates and patient outcomes such as mortality and Medicare spending.

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**Persistent Functional Neurological Symptom Disorder Spontaneously Remits With ECT Treatment**

Raphaela Fontana, Frank Clark, and Benjamin Griffeth

**Background:** A 49-year-old Caucasian female has had 3 psychiatric hospitalizations over a 2-year time period since a complicated cardiac ablation that resulted in the patient needing defibrillation for nonsustained ventricular tachycardia. Family and patient both endorse alterations in her mood and emergence of a new debilitating tremor after being told about the cardiac arrest requiring lifesaving measures.

Initially, this patient was treated with psychotropic medications during her first hospitalization, which improved her depression, but not her functional tremor. Approximately 1 year later, she had...
2 recurrent hospitalizations for acute decompensation with catatonia and significant tremor within a 2-month span. At that time, the patient’s medical workup and imaging were largely within normal limits or found to be unremarkable.

The patient’s catatonic presentation and functional motor tremor resolved with concurrent psychotropic medications (Remeron 30 mg QD, Propanolol 10 mg TID, Zoloft 200 mg QD, Risperdal 1 mg QHS, Ativan 0.5 mg TID), and electroconvulsive therapy (ECT) during both hospitalizations. A paucity of evidence exists demonstrating the remission of conversion disorder with a multimodal therapeutic approach of ECT and psychotropic medications. This case presentation will investigate the potential use of ECT in treating functional tremor/conversion disorder in a patient with underlying refractory depression.

Objectives: Present a case in which a proposed relationship can be shown between a traumatic event and new-onset conversion disorder. Propose and explore a new treatment modality with ECT for a patient with refractory or treatment-resistant depression and concurrent conversion disorder.

Optimization of Automated Guided Vehicle System in Health Care Facility
Kade Gilstrap, Amogh Bhosekar, Tugce Isik, Sandra D. Eksioglu, and Robert Allen

Background: Automation in material handling systems has been a key to promoting cost-effective material flow within health care facilities. This research analyzes Automated Guided Vehicles (AGV) use in a hospital. AGVs perform tasks such as moving surgical instruments, drugs, linen, food, and trash. Use of AGVs has improved staff utilization; however, it has also increased traffic and congestion.

Purpose: The goal of this study is to evaluate the impact of AGV use in the hospital.

Methods: Historical data about travel time for all AGV trips at different times of the day and days of the week have been analyzed.

Results: A Pareto analysis indicated that the majority of AGV travel time is spent in 3 trips. A statistical analysis of these trips demonstrates that the distribution of travel time during peak and off-peak hours is statistically different. The same holds true for travel times during different days of the week. Difference in travel time is the result of congestion.

Conclusion: Based on these results, we believe that reducing the number of AGVs used and implementing a Kanban system, which maintains only a fixed number of AGVs active and moving during peak hours, will reduce congestion. This numerical analysis provides the data necessary for developing a simulation model that will identify the right number of AGVs to use in this system at different hours of the day and different days of the week.

Improving Quality to Facilitate Research
Amanda Goode, Katie Daniels, and Matthew Hudson

Purpose: Federal regulations require that an Institutional Review Board (IRB) review and approve all human subjects research before research initiation. To optimize review efficiency, Greenville Health System’s Office of Human Research Protection (OHRP) revised its policy on adverse event reporting in June 2017. Investigators may now report in aggregate at continuing review all nonserious adverse events that are not unanticipated problems. OHRP examined whether this change reduced the duration from submission to IRB approval.

Methods: There were 1318 IRB submissions from January 2017-March 2017 (before policy revision), with 582 submissions from October 2017-December 2017 (after policy revision). OHRP compared summary statistics and performed analyses by review type (full board or expedited) and time period.

Results: Mean and median full-board review durations decreased from 41.08 and 30 days, respectively, to 24.43 and 22 days, respectively, subsequent to policy change ($U = 6067.5; P < .0001$). The mean expedited review duration decreased from 20.75 to 13.37 days, while the median was 12 days for both time periods ($U = 234 106.5; P < .0002$).
Discussion: Results suggest that OHRP improved IRB efficiency by changing the adverse event reporting process. This change could afford our patients more immediate access to clinical trials and provide system leadership with quicker access to care improvement data. Finally, this improvement may also relieve administrative burden for investigators, study coordinators, IRB chairs, and IRB coordinators. Collectively, these benefits may facilitate sustained research engagement and enhance IRB resource use.

The Correlation Between Residency Applications and Standardized Behavioral Assessments for Gaining Entry Into a Graduate Medical Education Program

Vincent Green and Ardalan Ahmadi

Purpose: This study’s purpose is to develop a standardized assessment tool for selecting residents into a graduate medical education (GME) program.

Methods: A standardized assessment tool for selecting residents into a GME program was developed by faculty within the Greenville Health System (GHS) Family Medicine Residency. The assessment tool consisted of two parts: (1) a preinterview instrument (maximum total score = 28) assessing board scores, grades during undergraduate medical education, extracurricular activities, letters of recommendation, interest in family medicine, and scholarly activity; and (2) a rubric of behavioral questions (maximum total score = 16) with standardized anchors for objective assessment within the domains of problem solving, resilience, interpersonal communication and professionalism, and emotional intelligence. The tool was used to assess all applicants who interviewed with the GHS Family Medicine Residency during recruitment for the class beginning July 2018.

Results: Overall, 71 applicants (mean age = 27.1 years; 49.3% male, 50.7% female; 80% Caucasian, 7% African American, 3% Hispanic, 10% other) were selected to interview from October 2017-January 2018. The mean preinterview assessment score = 22.73 (range 17-27), behavioral rubric score = 11.46 (range 8-16), and total composite score = 35.4 (range 27-42). Correlation between the application preinterview assessment and the behavioral rubric measuring interview performance was 37.3%. Low correlations were also found within each individual domain of the preinterview assessment and the behavioral health questions.

Conclusions: Objective tools for selection into GME programs are lacking. Ideal selection criteria include a combination of the candidate’s application and performance during an interview. Data from this investigation suggest little correlation exists between strength of application and interview performance, which highlights the need for measuring both components during the selection of candidates into GME programs.

JUMPing Into Diabetes Control

Lauren Hassan, Sheena Henry, Gail Chastain, and Meenu Jindal

Background: A study analyzing the results of the Boston Area Community Health Survey confirmed that socioeconomic status has a stronger association with diabetes prevalence than does race. If systems were in place to address socioeconomic barriers, the inequality in diabetes prevalence and complication rates may improve.

Purpose: The construct of this study (named JUMP as an uplifting, motivating title) is to provide patients who have diabetes with a group setting focusing on self-empowerment.

Methods: Groups included 1 or 2 resident facilitators, a diabetes educator, and 5-10 internal medicine clinic patients. The program included 3 weekly sessions consisting mostly of patient-led discussion. JUMP has graduated 24 participants. As a comparison group, 24 patients were pooled from the list of clinic patients who expressed interest in the program but did not enroll. Patients’ pretest and posttest JUMP HgbA1c levels were measured.
**Results:** JUMP participants showed a statistically significant decrease in HgbA1c. The average pre-JUMP HgbA1c was 9.3 ± 2.5; post-JUMP level was 8.0 ± 1.9. The difference yielded a mean drop in HgbA1c of 1.3 (∊ < .001). The control group yielded pre-JUMP HgbA1c of 9.0 ± 2.2 and post-JUMP level of 9.2 ± 2.3, a variation with no significant change (∊ = .418).

**Discussion:** The United Kingdom Prospective Diabetes Study found that the rate of microvascular complications from diabetes fell by 25% when comparing patients with a mean HgbA1c of 7.9% to those at 7.0%. Incidence of diabetes-related deaths, myocardial infarctions, and all-cause mortality was significantly lower for each 1% improvement in HgbA1c. This result is promising given that the mean decline in A1c for JUMP participants was 1.3%

**Identifying the Profile of Youth Who Present to the Emergency Department for Psychiatric Reasons**
Sharon Holder, Dawn Blackhurst, and Eunice Peterson

**Objectives:** This study examines use of Greenville Memorial Hospital’s (GMH) Emergency Department (ED) for mental health visits by the pediatric population over a 5-year period.

**Methods:** A retrospective study of all psychiatric visits of children age 5-18 visiting the GMH ED from Jan. 1, 2010-Dec. 31, 2014, was conducted. Psychiatric visits were identified using the primary ICD-9 diagnosis codes of 290.0-319.0. The population was categorized into 3 age groups based on school-age grades: 5-10, elementary; 11-13, middle school; and 14-18, high school.

Demographic characteristics and ED use were compared among the age groups; ∊ values < .05 were considered statistically significant. Hospital Institutional Review Board approval was obtained before the study.

**Results:** There were 2,700 visits of the study population. This number made up ~11% of the total psychiatric ED visits in the study timeframe (N = 25,411). Total number of visits increased from 380 in 2010 to 698 in 2014 (84% increase). The greatest increase was in the 11-13 age group (137%). The majority of visits occurred on weekdays (79%); however, the older age groups had a higher percentage of weekend visits (21% vs. 15%). The elementary and middle school groups were predominantly male (60% vs. 40%), while the high school group was predominantly female (52% vs. 48%).

**Conclusion:** Statistically significant differences were found in ED use characteristics among the 3 age groups. Females were more likely to visit the ED than males. Among the older age groups, those diagnosed with anxiety were more likely to visit the ED. Understanding the profile of youth who use the ED has clinical implications for developing treatment protocols in the ED, community partnerships, and mental illness preventive practices.

**Are We Asking the Right Questions? Screening and Counseling for Environmental Tobacco Smoke Exposure at a Federally Qualified Health Center**
Elizabeth Holt, Jackson Pearce, McKenna Luzynski, Matthew Delfino, and Lochrane Grant

**Background:** Interventions that combine provider training with “practice transformation” techniques can greatly increase screening and counseling for environmental tobacco smoke (ETS) exposure during pediatric visits. A clinic-based family smoking cessation intervention is planned at a multisite federally qualified health center (FQHC) serving rural/suburban patients in the Upstate of South Carolina. Rates of smoking at the FQHC are >2 times the national average.

**Purpose:** To inform intervention design, we assessed the following: (1) provider practices around screening and education for ETS exposure at the pediatric encounter, and (2) provider-stated barriers to counseling and referral to cessation resources.
**Methods:** Medical record data for all 2017 pediatric visits (N = 7997) were analyzed to determine rates of screening and education around ETS. Provider surveys were administered (n = 11) to identify specific education techniques used and key barriers to counseling and referral.

**Results:** Preliminary analyses revealed that provider-documented screening and/or education for pediatric ETS exposure occurred in 55% of pediatric encounters. Rates varied by provider/clinic site and visit type. Analyses are underway to assess variation by documented respiratory disease. Initial results from provider surveys revealed that (1) specific education/counseling techniques used vary widely, (2) smoking cessation resources (such as quitline referrals and nicotine replacement therapy) are underused, and (3) practice-wide changes in electronic medical record prompts could increase counseling and referral to cessation resources.

**Conclusion:** Implementing clinic-based family smoking intervention could increase the quality of patient counseling and frequency of referral to smoking cessation services, reducing morbidity and mortality among a patient population where smoking rates are high. Data from this pilot study will inform future intervention dissemination across the region.

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**The Effect of Fad Diets on Patients’ Perceptions of Health and Disease**

Cassidy Hood, Robert Masocol, Alex Ewing, Vicki Nelson, and Irfan Asif

**Purpose:** This study’s purpose was to identify common nutritional perceptions among adult patients in a high-risk family medicine clinic.

**Methods and Study Design:** The method used was a cross-sectional survey. A paper survey was distributed to adult patients within a high-risk family medicine residency clinic from September 2017-October 2017.

**Results:** A total of 220 adult patients were surveyed (69% female; 50% African American, 38% Caucasian) with the majority of patients between 25-65 years old (75%) with a BMI >25 (80%). A total of 45% of patients identified as being overweight/obese, 55% identified as having diabetes, 42% identified as having hypertension, and 29.5% identified as having hyperlipidemia. Approximately 63% of participants described a healthy diet to include fruits and vegetables, with only 23.6% of those patients eating 5 or more servings of fruits or vegetables per day; 28.6% of participants could not describe what constituted a healthy diet. Also, 31.3% of patients have used fad diets in the past, with only 15.4% of patients considering fad diets healthy. A total of 30.4% of patients identify the media as a major influence on their dietary choices (18.2% TV and social media).

**Conclusions:** Participants identified a healthy diet as plant-based, though few follow this recommendation. Nearly 33% of patients report trying a fad diet.

**Significance:** This study identifies the significant overall lack of knowledge and understanding of appropriate nutrition, including the common belief in and use of fad diets, and the poor insight of chronic disease and its link to nutrition among adult patients in a high-risk family medicine clinic. It is imperative that sufficient patient counseling and education on healthy diets be conducted on a regular basis.

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**Leader Mindfulness, Unit Well-Being, and Patient Care**

Chelsea LeNoble, Michelle Flynn, Marissa Shuffler, Nastassia Savage, Sharon Wilson, and Tod Tappert

Health care leaders must provide positive environments for their employees and their patients despite staffing shortages, policy changes, and shifting economic demands. Ensuring leaders possess the right skills is critical for everyone—from nurses, doctors, and staff, to patients and their families. This study considers the impact of leader attributes of mindfulness and emotion regulation on their staff and patients.
To examine the impact of leader mindfulness and emotion regulation on unit and patient outcomes, multisource longitudinal data from 698 health care leaders and 123,000 health care employees were analyzed. Mediated regression analyses indicate that (1) leader mindfulness improves emotion regulation strategies and leader-unit relationship quality, and (2) a high-quality leader-unit relationship improves the unit’s ability to recover from work stress and provide high-quality patient care. These results suggest that mindful leaders are more likely to use appropriate emotion regulation strategies at work, foster quality relationships and well-being norms with their staff, and facilitate top-notch patient care.

The ability of leaders to manage themselves and their employees is crucial for health care. When leaders are ineffective, their employees are more likely to burn out, and their patients are less likely to receive effective care. The result not only costs hospitals millions, but also reduces the overall health of patient populations served. These findings highlight the importance of leadership development programs that improve leaders’ mindfulness and emotion regulation skills and that foster a healthier organizational culture.

Implementation of the Survey of Well-Being of Young Children (SWYC) Form in a Primary Care Office to Improve Screening of Children 2 Months to 5 Years of Age

Eric Lessard and Sara Ryder Emerson

Introduction: The American Academy of Pediatrics and Bright Futures recommend monitoring all children for developmental progression and social determinants of health at well-child check evaluations. Because a variety of tools are available to meet screening requirements, patients often receive multiple screening forms per visit, which is laborious for families and clinical staff alike.

Tufts University developed a comprehensive screening tool, the Survey of Well-Being of Young Children (SWYC), which includes developmental, interpersonal/behavioral, and social determinants of health screening for children 2 months through 5 years old. Our aim was to use this tool to improve pediatric screening in our clinic by approximately 20%.

Material and Methods: Baseline data for correct distribution of screening tools were obtained from retrospective chart audits of children 0-5 years old seen at the Greenville Health System (GHS) Center for Family Medicine during a 2-month period. The SWYC form was then introduced via small group educational sessions involving physicians and clinic staff. One month after implementation, chart audits were repeated measuring percentage of forms completed by caregivers.

Results: Before SWYC implementation, patients received age-appropriate screening tool(s) 62% of the time. After SWYC introduction, age-appropriate screening tool completion improved to 94%.

Conclusion: This study demonstrates that implementing the SWYC form at the GHS Center for Family Medicine provided more consistent comprehensive developmental and social screening of children 0-5 years old.

Increasing Compliance With Consistent Sterile Procedure During Central Line Fluid Changes in the Small Baby Unit of the Neonatal ICU to Decrease the Central Line-Associated Bloodstream Infection (CLABSI) Rate

Melissa Motes and Michael Stewart

The purpose of this project was to increase compliance with consistent sterile procedure during central line fluid changes in the Small Baby Unit of the neonatal ICU to decrease the CLABSI rate and maintain the lower rate.

The framework for this quality improvement was the Iowa Model of Evidence-Based Practice. To increase compliance during central line fluid changes, a PICC nurse (nurse using a peripherally in-
serted central catheter) was present to assist during the line change. Re-education with a skills check-off on sterile technique and proper process for central line fluid changes was also performed on the unit before the intervention began.

Average compliance for this project was 42%. Overall percent change in the average CLABSI rate was 17%, but the overall percent change for CLABSIIs related to maintenance was -50%. This quality improvement showed that the implementation of a PICC nurse to assist during central line changes, in addition to routine education, may not result in an overall decreased CLABSI rate, but may result in reduced CLABSIIs that can occur during maintenance of central lines.

This project demonstrated that increasing compliance with proper procedure during central line changes, in addition to continued skills check-offs, can reduce CLABSIIs caused by maintenance, resulting in decreased negative outcomes in infants with extremely low birth weight.

**Can Commercially Available Voice Prompting Automated Electrical Defibrillators (AEDs) Be Utilized Effectively by Grade School Children?**

**Sally Peterson, Phillip Moschella, Amy Ramsay, and Dotan Shovrin**

**Purpose:** Out-of-hospital cardiac arrest survival rates involving AED use in the United States is poor despite known survival benefits. Lack of knowledge is cited as the main barrier to increased use. We sought to evaluate if grade school children can properly use an AED prompted only by the machine’s voice/self-contained written instructions.

**Methods:** An Institutional Review Board-approved pilot study was conducted using randomly selected grade school children attending a health fair at Clemson University. Participants were given a commercially available AED, surveyed if they had any experience with the device, and then asked to use the device on a simulation manikin. They received only the voice prompting/printed instructions from/on the device itself. The ability to correctly apply/discharge the device across several steps was charted by an observer on a yes/no basis along with the total time (in seconds) to correctly complete AED application.

**Results:** A total of 35 of 37 students (95%) elected to participate. Of those, 100% of the students had never used the device previously. Of the 35 students, 31 children (88.5%) were able to correctly turn on the device; 24 of 35 students (68.5%) correctly removed and attached the pads to the manikin chest/AED; and 28 of 35 children (80%) correctly discharged the AED shock. Average time to correctly complete AED placement and shock was 81 seconds.

**Conclusions:** This pilot study demonstrates that grade school children can correctly use an AED with instructions provided by the device itself. Further education and training in grade schools may prove beneficial and cost efficient to improve overall community use of AEDs involving out-of-hospital cardiac arrest.

**Reducing Burnout and Improving Meaningful Work Through Medical Resident Poverty Simulation: A Pilot Study**

**Camiron Pfennig and Chelsea LeNoble**

Health care professionals are at significant risk for burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment. As the intensity of health care work continues to escalate, the need for interventions aimed at mitigating burnout and increasing providers’ sense of meaningful work is apparent.

Health care professionals may experience burnout symptoms when patients miss appointments or do not adhere to prescribed treatments, as this diminishes a sense of meaning in their work. Many times, these behaviors are not a result of the patients’ lack of effort, but stem from external factors related to socioeconomic status and health disparities. To obtain better insight into the lives of their patients, medical residents at a large hospital system participated in a poverty simulation—an im-
mersive experience in which participants take on the identity of a person in poverty and navigate their daily challenges.

To examine the impact of the simulation, 24 medical residents who completed a poverty simulation and 43 medical residents who did not participate reported their sense of meaningful work and emotional exhaustion both before the poverty simulation and again 1 month later. Results indicate that residents who took part in the poverty simulation reported an increase in meaningful work compared to the control group from Time 1 to Time 2. While emotional exhaustion slightly increased for the poverty simulation group, the average score was significantly lower than for the control group. These findings provide initial support for the effectiveness of a poverty simulation in reducing burnout and improving meaningful work for medical residents.

Initiation of an Osteoporosis Treatment Program at Our Institution
Drew Ratner, Billy Clark, Amy Trammell, Laura Boineau, and Kyle Jeray

The purpose of this study is to examine the effectiveness of our osteoporosis program at preventing future fragility fractures in our population of patients with hip fragility fractures, including how many patients were started on an osteoporosis treatment.

Institutional Review Board approval was obtained for this retrospective review. We reviewed all patients treated at our institution for hip fragility fractures from January 2013-July 2013. The primary outcome measure was the number of patients who met with the osteoporosis nurse practitioner (ONP) and started an osteoporosis medication. Initiation of calcium and/or vitamin D and subsequent fragility fracture were also examined. In addition, we examined length of stay in hospital, time from admission to surgical intervention, time from surgery to discharge, ambulatory status on admission and discharge, location of discharge, and mortality.

There were 151 hip fractures deemed to be fragility hip fractures during that period. Average time to surgery was 37 hours (SD = 21). Forty-two patients (28%) previously had a fragility fracture. Forty-seven (31%) followed up with the ONP. Of those, 34 were started on an osteoporosis medication, and all of them were started on calcium and vitamin D. Overall, 13 patients re-presented before 2017 with a subsequent fragility fracture (mean time 398 days to refracture), 5 of which were being treated by the ONP. This finding is an improvement compared to nationwide averages (~20%).

This study shows promise for the initial stages of our osteoporosis program in providing osteoporosis treatment following fragility fractures.

Employing the Patient-Centered Collaborative Care Approach: A Case Study of a Complex Geriatric Patient With Psychopathology of Treatment-Resistant Depression and Primary Hyperparathyroidism
Joel Saul, Sharon Holder, and Jonathan Lokey

Primary hyperparathyroidism is a relatively common endocrine disease with many nonspecific physical symptoms as well as potentially serious psychiatric effects. Incidence of the illness, severity of symptoms, and poorer outcomes are all positively correlated with increasing patient age. The Patient-Centered Collaborative Care Approach is a demonstrable method of coordinating patient care, reducing the burden on patient advocates, and improving patient outcomes. Use of the Patient-Centered Collaborative Care Approach has not previously been well described in treating psychiatric manifestations of primary hyperparathyroidism.

Using the example of an elderly woman admitted with complex psychopathology and a diagnosis of primary hyperparathyroidism, this case illustrates the value of the Patient-Centered Collaborative Care Approach in (1) establishing accurate diagnoses, (2) reducing harm from comorbidities, (3) improving patient outcomes, and (4) potentially reducing hospital costs.
The case exemplifies the potential benefits of implementing the Patient-Centered Collaborative Care Approach in treating a medically complex patient hospitalized for psychiatric complaints. A diagnosis of primary hyperparathyroidism was made, and a multidisciplinary team treated this patient using the Patient-Centered Collaborative Care Approach. This team involved psychiatry, internal medicine, and endocrine surgery, as well as family members. Parathyroid adenoma was confirmed and mass was removed surgically. The patient made a rapid and dramatic improvement, and her depressive symptoms remitted. The critical importance of applying clinical flexibility, questioning available data, and employing a collaborative team approach to the evolution of a diagnosis is addressed.

Caring for Caregivers: Identifying Personality Risk Factors in Burnout Development

Nastassia Savage, Zachary Klinefelter, Marissa L. Shuffler, Camiron Pfennig, and Ronald Pirrallo

Burnout is a well-recognized issue in health care, where it negatively impacts patient care (eg, Atkinson et al, 2017) and physician suicide risk (Shanafelt et al, 2011). Although the estimates of burnout prevalence vary, a study found 50% of medical residents and fellows were burned out and exhibited symptoms of depression (Dyrbye et al, 2014). One predictor has been that personality (eg, extroversion, agreeableness, conscientiousness, intellect, neuroticism) as certain traits were more prone to burnout (eg, McManus et al, 2004; Ripp et al, 2011; Swider and Zimmerman, 2010; Zellars et al, 2000). This study assesses the role of personality in burnout development longitudinally.

We used the mini-IPIP to evaluate personality in 10 first-year ED residents prior to residency (June 2017) and the MBI-HSS to assess burnout before residency and every 4 weeks starting in September 2017. Using general linear model repeated measures analyses, results indicate that extroversion and intellect significantly predict burnout development for emotional exhaustion and depersonalization, and that agreeableness, conscientiousness, and neuroticism did not.

The above results should be used cautiously, as they are limited by the small sample and reliance on self-report survey data. However, they provide some support for the role of personality in burnout development in residents and should be reassessed in other, larger, more diverse samples (eg, departments). Doing so could help target interventions to offer assistance to those residents more at risk for developing burnout than others. Additionally, at-risk residents could be offered extra support and guidance (eg, mentors, relaxation activities) to limit the development of burnout.

Return to Sport as Outcome Measure for Shoulder Instability: Surprising Findings in Nonoperative Management in a High School Athlete Population

Ellen Shanley, Charles A. Thigpen, Lauren Ruffrage, Douglas J. Wyland, Michael J. Kllsenberth, and John M. Tokish

Objectives: Recurrence rates have traditionally been used as a proxy for “failure” when comparing conservatively vs. operatively managed patients with anterior shoulder instability. Return to sport has been evaluated as an outcome proxy after surgical intervention, but no study has compared conservative vs. operative management using sustained return to sport as the main outcome measure. The purpose of this study was to compare results between conservatively and operatively treated patients as to their ability to return to uninterrupted sport in a subsequent season after an anterior instability event.

Methods: We identified and followed 179 scholastic athletes treated for a confirmed diagnosis of anterior shoulder instability. Ninety-seven were treated initially with conservative management; 32 were managed surgically. Patients were excluded if they did not have remaining eligibility to play (were high school seniors) or were treated with benign neglect (neither conservative nor operative treatment). Ultimate success was defined as “return and completion of the subsequent season without time loss due to any shoulder-related diagnosis.” We substratified by age,
sport, and type of instability event (subluxation vs. dislocation) using ANOVA and binary logistic regression.

**Results:** In the conservatively managed group, 85% achieved ultimate success by returning to play a complete subsequent season of scholastic athletics in the same sport without time loss due to a shoulder condition. In the surgical group, 72% achieved this status ($\text{OR} = 4.96$, 95% CI = 1.2-9.6). Age did not differ between the 2 groups. Patients were 5 times less likely to return to sport if they had sustained a dislocation requiring reduction compared to a subluxation confirmed as an anterior instability event ($\text{OR} = 4.96$, 95% CI = 1.2-9.6).

**Conclusion:** Patients treated conservatively for an anterior shoulder instability event were far more likely to have a “successful” outcome than published results if the definition of outcome is changed from “no recurrence” to “completion of a subsequent season in their same sport.” Patients sustaining a subluxation were nearly uniformly successful in doing so. While surgical success using this definition was quite lower, there was likely a selection bias in the decision-making process due to bone loss, surgeon preference, or other factor. Nevertheless, the data would suggest that if a patient’s goal is to return to the same level of sport and complete the next season, conservative management is highly effective. Further study to determine whether these results hold with longer term follow-up is warranted, but the routine fixation of the first-time dislocator based on better outcomes is called into question depending on one’s definition of success.

**Using Epic to Measure Referral Rates by Greenville Health System Pediatricians to Developmental and Behavioral Support Services**

Megan Schmalz, Julia Moss, Jacqueline Forrester, Sarah Griffin, Christopher Wilson, and Kerry Sease

The purpose of this study was to examine the rate at which Greenville Health System (GHS) pediatric primary care providers refer patients with developmental and behavioral concerns to Help Me Grow South Carolina (HMG SC) and to understand the most common concerns among children being referred.

The study examined a cohort of patients from May 2016-April 2017 who may have benefited from HMG services based on age (<4 years) and identification of a possible developmental delay (through commonly used diagnosis codes). Referrals to HMG, as well as to early intervention services, were analyzed. In this population (N = 1654), the most frequent diagnoses were general speech and developmental delays. Average age at diagnosis was 20.3 months, with the majority of patients being male (63.3%). A total of 7.8% of patients were referred to HMG; however, 74.2% of patients referred to HMG were connected to early intervention services.

GHS physicians who use HMG are making age- and diagnosis-appropriate recommendations to HMG, resulting in a clinically significant rate of connection to services; however, a missed opportunity exists currently because of low referral rates. The sample also displayed a gender disparity in diagnosing developmental delays and behavioral concerns, similar to results found in existing literature.

The study highlighted the need for a more streamlined approach to physician referral to HMG and other support services. It also informed a pilot project (GHS Pediatric Support Services), whereby physicians can easily refer to HMG and other community services through 1 simple referral within the medical record.

**Impact of an Alert Reduction Strategy on Pharmacist Alert Override Rates Within a Clinical Decision Support System**

John Schoonover, Becky Sawyer, Lucy Crosby, Alyson Ghizzoni-Burns, and Jun Wu

Clinical decision support (CDS) provides information electronically to help the clinician make informed treatment decisions. Benefits of CDS include reduced medication errors, improved quality of care, and enhanced efficiency.
A major consideration of CDS implementation is the large number of clinical checking alerts generated during order entry and verification. If alerts are frequent but not consistently meaningful and actionable, clinicians become desensitized over time. Desensitization, also known as alert fatigue, can lead to clinician frustration and patient harm as important alerts are overlooked. Opportunities exist within CDS systems to customize alerts by various methods, including filtering visibility by certain disciplines only (e.g., pharmacists only), filtering by severity level, changing the severity level, and turning off/on completely.

The study objective is to determine if reducing pharmacist-specific alerts reduces alert fatigue (override rates per 100 orders) and improves pharmacist perceptions of utility.

This prospective, systemwide, pre/postintervention, quality improvement study will be conducted over a 6-month period. The preintervention phase will include pharmacist education and a brief satisfaction survey. Following the education and a committee-based review and approval process, CDS alerts will be modified to target a 10% reduction. Pharmacist satisfaction and override rates will be measured and compared to preintervention values during the postintervention phase.

The primary endpoint is pharmacist override rate per 100 orders. Secondary endpoints include change in total number of alerts, pharmacist override reasons, satisfaction survey results, pharmacist intervention data, and number of reported medication events.

Study outcomes and data collection are currently underway.

Comparing Telephone-Based Diabetes Education to Resident Clinic Standard of Care in Uncontrolled Type 2 Patients With Diabetes

Henry Schwartz, Caroline Clary, Gail Chastain, and Meenu Jindal

Introduction: The morbidity and mortality of type 2 diabetes, as well as the disease’s contribution to our national health care cost burden, cannot be overstated. The resident clinic with its primarily underserved population of patients offers a unique opportunity for residents to care for notoriously difficult-to-manage patients who have diabetes.

Methods: Fifty-two patients using our internal medicine residency clinic for primary care were enrolled August 2016. Primary enrollment criteria were a diagnosis of diabetes mellitus type 2 and a most recent hemoglobin A1c >9.0 at time of enrollment. Twenty-six patients were randomized into the intervention arm of the study. These patients received 6 months of diabetes education over the telephone via a certified diabetes educator employed by the clinic. The primary outcome measure was hemoglobin A1c as collected by the PCP as part of standard of care.

Results: Following a rolling schedule of enrollment starting August 2016, the intervention arm of the study was completed August 2017. Hemoglobin A1c data were gathered and analyzed comparing trends between the control and intervention arms.

Conclusion: Developing new and innovative ways to improve blood glucose control in historically difficult-to-control patients with diabetes represents an exciting area of ongoing research in primary care medicine. A cost-effective telephone intervention program used to both educate patients and identify barriers to care would be a perfect example of such an intervention. As any intervention needs to be evidence based, this study represents the first stages of development of such a program.

Comparison of High- vs. Low-Fidelity Simulation Models for AHA CPR Training in Middle School Students

Bijal Shah, David Wong, Sally Peterson, Phillip Moschella, Amy Ramsay, and Dotan Shvorin

Purpose: To test the ability of middle school students to learn American Heart Association (AHA) “CPR Anytime” training using both high- and low-fidelity simulation models.

Background: Current rates of bystander CPR in South Carolina remain dismal despite known survival
benefits. Programs have been targeted at high schools and adult community events with mixed results. Multiple countries have trialed CPR training in elementary and middle schools, but costs of the simulation models necessary for training are expensive and bulky.

**Methods**: Commercially available high-fidelity simulation manikin models will be assessed against simple air bellows foot pumps to test their noninferiority during AHA CPR Anytime training of 450 students at a local charter middle school. These results will also be compared to a historical cohort of high school students using similar manikin-only based training. We will test for retention and ability using established methods from the AHA included with the training program.

**Outcomes**: We anticipate that the simple air bellows will provide a noninferior training model as compared to the expensive and bulky manikins. These widely available air bellows are inexpensive and may entice more districts/schools to implement training that would otherwise have been deemed too costly.

**Conclusion**: This program is designed to expand the scope and dissemination of CPR Anytime training by providing a lower cost/fidelity option comparable to the AHA CPR training, which we hope will improve bystander CPR rates through education of local youth.

**Critical Social Thinking and Mindfulness Skills as Levers for Facilitating Health Care Unit Engagement and Unit Climate for Patient Safety: A Longitudinal Examination of the Impact of Conscious Leadership and Professionalism**

Marissa Shuffler, Chelsea LeNoble, Michelle Flynn, Dana Verhoeven, Nastassia Savage, Pamela Farago, Tiffany Cooper, Sharon Wilson, and Terrie Long

In health care, emotional demands and stress can negatively impact relationships among employees, reducing engagement and increasing turnover (Ahearn, 2006). Leaders can play a key role in addressing these challenges. In particular, leaders who are provided with developmental activities to refine the skill of navigating relationships with and among their employees are more likely to set team climates that foster employee engagement and reinforce patient safety.

Empirical evidence has suggested that focusing on self-awareness, social dynamics, and mindfulness may be particularly beneficial for health care leadership. Accordingly, this research provides a multimethod, multisource, long-term examination of the impact of a leadership and professional skill development program focused on such competencies: the Conscious Leadership & Professionalism program. This program is derived from evidence-based practices and principles of leadership development and training design.

Data from 1189 health care units and their leaders were collected over the course of 4 years to evaluate longitudinal effects on unit outcomes of engagement and climate for patient safety. Multilevel structural equation modeling analyses were then conducted.

Program participation and learning are significantly and positively predictive of leader-employee relationships, greater workplace engagement, and positive perceptions of patient safety climate. This type of training program is a promising avenue for continued exploration and application in health care, as it may help to improve both employee engagement and the patient experience.

**Strategic Development of a Research Experience Enrichment Program (REEP) in the Emergency Medicine Department**

Dotan Shvorin, Ronald Pirrallo, Kevin Taaffe, and Phillip Moschella

**Objective**: To establish a Greenville Health System (GHS)-Clemson University (CU) collaboration that seeks to improve patient care processes and outcomes by applying engineering methods within the GHS Department of Emergency Medicine.
Background: The Creative Inquiry (CI) program matches motivated undergraduate and graduate students with CU faculty to facilitate imaginative engaged learning and cross-disciplinary interactions to produce the next generation of scholars.

Hypothesis: Can the CU CI program be adapted to the GHS health care environment to advance GHS scholarship and workforce development?

Methods: Under the leadership of an embedded CU scholar, 6 teams of CI students were matched with GHS EM clinical faculty and EM residents to investigate these topics: CPR training effectiveness, quantifying physician distractions, clinician decision making under fatigue, describing clinician physiologic biomarker variability during a shift, understanding the effect of consultant use on ED operations, and TB screening modeling.

Outcomes: Six teams incorporating 12 EM GHS faculty, 6 EM residents, 18 undergraduates, and 5 graduate students formed REEP to answer these 6 research questions over the course of a year. The teams generated 6 confirmed abstract conference presentations that secured a CU internal award of $6000 for dissemination.

Conclusion: REEP appears to have adapted the CU CI framework to produce promising scholarly work and expose nearly 2 dozen CU students to the health care environment this year. Future work will evaluate if these teams generate peer-reviewed manuscripts and track how many CU REEP participants pursue careers in health care.

Statin Shared Decision Making and Patient Education Study
Brittany Kizer Stovall, Alexa Bianchi, and Meenu Jindal

The 2013 American College of Cardiology/American Heart Association task force on practice guidelines demonstrated a new perspective focusing on atherosclerotic cardiovascular disease risk reduction from statins. With a paradigm move to patient-centered medicine, shared decision making (SDM) tools have created a collaborative way for medical decision making. One key question remains: Does SDM and use of an aid increase patients’ knowledge and continuation of taking statins?

The study population consisted of lower socioeconomic status, current statin use, and no known history of cardiovascular disease or coronary artery disease. The sample size was 27 individuals.

During their clinic visit, patients were asked to answer a survey regarding their knowledge of the mechanism of action, risks, and benefits of statins. Upon finishing the initial survey, patients then underwent an SDM session using the Mayo Clinic SDM Statin Aid. After the session, patients were asked to complete a postintervention survey. Scores of the initial and postintervention surveys were compared by paired t-test.

Two main areas were assessed: (1) the association between statin SDM aid and education, and (2) the impact on their decision to continue to take a statin. There was a 33% increase in patient education with a P value of < .001, along with a 94% willingness to continue to take their statin after the SDM. Therefore, SDM was shown to be effective for patient education; SDM should be encouraged and emphasized in academic training regardless of educational level or socioeconomic status.

Early Treatment Innovation for Opioid-Dependent Newborns: A Retrospective Comparison of Outcomes, Utilization, Quality, and Safety, 2006-2014
Julie Summey, Liwei Chen, Rachel Mayo, Elizabeth Charron, Jennifer Hudson, Windsor Westbrook Sherrill, and Lori Dickes

Background: Few coordinated treatment programs address the needs of infants and families struggling with the effects of substance use. In 2003, Greenville Memorial Hospital launched the Managing Abstinence in Newborns (MAIN) program, providing multidisciplinary, coordinated, community-based care for neonatal abstinence syndrome (NAS). The aim of this study was to compare the
outcomes of MAiN infants to comparable NAS infants receiving traditional care between 2006-2014 in South Carolina.

**Methods:** De-identified sociodemographic and clinical data on MAiN infants, as well as NAS infants not treated with MAiN, were obtained from statewide databases in South Carolina. Study measures included medical and safety outcomes, health services use, child protective services involvement, emergency services utilization, and inpatient readmissions.

**Results:** We identified 110 infants who received the MAiN intervention and 356 SC NAS infants who were potentially MAiN-eligible. Overall, no significant differences existed in the two groups regarding medical or safety outcomes or child protective services involvement. Traditional care NAS infants were more likely to be treated in a higher level nursery (69% vs. 0%). MAiN infants had approximately $20,000 less per birth in average charges ($P < .001) and an almost 5 days shorter length of stay ($P < .001) than did the traditional care NAS infants. MAiN infants also had a lower percentage of ED visits ($P = .01) assessed as possibly or likely NAS-related, as compared to traditional care NAS infants.

**Conclusion:** This study demonstrates the potential value of implementing the MAiN model in eligible NAS infants. Benefits of implementation may include significant cost reduction without sacrificing quality and safety.

**New Public Health Partnership: GHS Emergency Department and SC DHEC HIV Surveillance Program**

Ben Theobald, Jackie Barnabe, and Phillip Moschella

**Purpose:** To describe the implementation, relevance, and results of an emergency department (ED)-based HIV surveillance system.

**Methods and Results:** South Carolina’s Department of Health and Environmental Control (DHEC) and Greenville Health System (GHS) have partnered to establish a program in which DHEC subsidizes “opt-out” HIV screening as performed on existing blood samples from individuals between the ages of 18-64 presenting to the ED with unknown HIV status. Newly diagnosed HIV-positive patients are then linked to initial treatment and follow up.

From Dec. 1, 2017-March 1, 2018, this program has tested 1123 individuals with 7 initial positives and 3 confirmed HIV diagnoses (0.26%). Of the remaining initial positive results, 2 were negative on confirmatory testing, and 2 others were previously diagnosed but were unknown in our medical record system.

**Summary:** HIV screening in the ED setting results in identification of undiagnosed individuals and successfully links them to treatment and follow up.

**Clinical Relevance:** Our program demonstrates how a government-supported, ED-based population health surveillance program can provide a positive impact on public health. With 30.2% of all HIV transmissions in the United States coming from undiagnosed individuals, the Office of National AIDS Policy set a goal that no more than 10% of HIV-positive patients in this country remain undiagnosed. At present, that rate is 14% nationally and 16.6% in South Carolina, indicating a need for increased HIV surveillance. This program serves this purpose by identifying undiagnosed cases of HIV, subsequently decreasing HIV transmission rates and prevalence in South Carolina.

**Cardiorespiratory Health, Muscular Strength/Endurance, and Fat-Free Mass Are Improved After 12 Weeks of Exercise Therapy in Cancer Survivors**

Jennifer Trilk, Ryan Porter, Noreen Denham, and W. Larry Gluck

No studies to our knowledge have examined the effects of a nurse-supervised exercise program using certified cancer exercise trainers on anthropometric and physiologic variables in cancer survivors across multiple diagnoses.
**Purpose**: To evaluate effects of Moving On, the Greenville Health System (GHS) Cancer Institute's Oncology Rehabilitation program.

**Methods**: GHS oncologists referred eligible cancer survivors to Moving On (12 weeks, 1 hour, 3 days/week of exercise therapy) after having completed initial chemotherapy or on maintenance chemotherapy and/or current radiation therapy. Baseline and follow-up evaluations included body mass index (BMI), body composition (body fat mass [FM], fat-free mass [FFM]), peak oxygen uptake (VO₂ peak), muscle strength (1-repetition maximum [1-RM]), and muscle endurance (repetitions at 40% 1-RM).

**Results**: Survivors (N = 11, 54.5 ± 14.8 years of age; 82% women) who completed the program with ≥80% attendance were evaluated. No change in BMI or FM occurred; however, body FFM and truncal FFM increased 3.5% (3.3 lb, P = .02) and 3.8% (1.7 lb, P = .01), respectively. VO₂ peak increased 20.2% (3.5 ± 0.9 ml/kg/min; P < .01), upper and lower body 1-RM increased 27.4% (24.8 ± 8.6 lb, P < .05) and 19.1% (35.8 ± 11.3 lb, P < .05), respectively. Upper- and lower-body muscular endurance increased 76.8% (+18.1 ± 1.9 repetitions, P < .001) and 76.3% (+13.7±2.8 repetitions, P = .001), respectively (absolute data reported as mean ± SE).

**Conclusion**: Cancer survivors across diagnosis groups and age ranges experienced anthropometric and physiologic benefits after taking part in Moving On.

**Applicability to Health Care**: Standard-of-care for cancer survivors should include exercise therapy to help ameliorate the deleterious effects of cancer therapy and maximize return to function and quality of life.

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**Randomized Controlled Trial of a 4-week Mindfulness Intervention Among Cancer Survivors**

Michael Wirth, Regina Franco, Sara Wagner Robb, Katie Daniels, Kerri Susko, Matthew Hudson, and Mark O’Rourke

Mindfulness-based practices encourage palliation through meditation, thus reducing stress and distress. This study examined a 4-week Mindfulness-Based Cancer Survivorship (MBCS) program among cancer survivors at Greenville Health System. Cancer survivor participants applied mindfulness practices to managing pain, fatigue, sleepiness, depression, and inflammatory and metabolic biomarkers. Investigators enrolled and randomized 40 cancer survivors to an intervention or control arm. The intervention group received a 4-week MBCS program with a 3-month follow-up postintervention. The control group received standard breathing exercises. Outcome measures assessed at baseline and 1-week postintervention included Pittsburg Sleep Quality Index (PSQI), Perceived Stress Scale (PSS), actigraphy data, and inflammation and metabolic biomarkers.

Analyses did not reveal any differences between intervention and control participants for the 4-week or 3-month time points. The intervention arm evidenced a reduction in sedentary hours at 4 weeks compared to baseline (-0.3 hours, P = .04). At the 3-month follow-up, the intervention participants significantly reduced their PSS (13.2 vs. 11.0, P = .06), PSQI score (8.1 vs. 6.3, P = .01), and sedentary hours (-1 hour, P = .03) compared to baseline. Their steps also increased by 1128 steps per day (P = .04). No changes were observed for biomarkers.

This study suggests that cancer survivors exposed to a mindfulness intervention report favorable changes to self-perceived stress, sleep quality, and physical activity. However, future research may identify potentially mediating factors such as dose of session, feasibility, and effectiveness among cancer patients. Additionally, future studies should consider enrolling more symptomatic patients to better evaluate effectiveness of such programs.
Full List of Abstracts Presented at the 2018 GHS Health Sciences Center Research Showcase

Best Overall Research
Individual Human Galectin-9 Domains Display Distinct Antimicrobial Properties
Anna Blenda, Nourine Kamili, Christian Gerner-Smidt, Anita Venkatesh, Connie Arthur, and Sean Stowell

Best Investigation of High-Value Care
Project REVISE—The Impact at GHS
Elizabeth Tyson, Karen Eastburn, Jeremiah Smith, and Kevin Polley

Best Investigation of Patient Engagement
Integrating Personalized Patient Goals and Priorities Into Clinical Care
Melanie Cozad, Gulzar Merchant, Rasmine Baker, and Kait Crosby

Best Investigation of Diabetes
JUMPing Into Diabetes Control
Lauren Hassan, Sheena Henry, Gail Chastain, and Meenu Jindal

Best Investigation of Population Health
Improving Population Health Through Hypertension Control
Susan Sutherland, Brent Egan, Robert Davis, David Ramsey, and Robert Hanlin

Early Investigator’s Award
Antibiotic Irrigation of the Surgical Site Decreases Incidence of Surgical Site Infection After Open Ventral Hernia Repair
Lily Fatula, Allison Foster, Hamza Abbad, Joseph Ewing, Ben Hancock, William Cobb, Alfredo Carbonell, and Jeremy Warren

Best Medical Student Research
Pneumatic Dilation Improves Esophageal Emptying on Timed Barium Esophagram in Patients With Esophago-Gastric Junction Outflow Obstruction
Claire Shin, Wojciech Blonski, Joseph Ewing, Joel Richter, and Steven Clayton

Best Nursing Student Research
Bioelectrical Impedance Analysis Accuracy: Factors That Affect Test Results
Maeve Murphy, Brandi Ingram, Sarah Feus, and Jillian Robert

Factors Affecting Salvage Rate of Infected Prosthetic Mesh
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Fine Needle Aspiration vs. Gencut Core: Is One Biopsy Method Superior in Terms of Tissue Volume?
Tiffany Aiken, Allyson Hale, Joseph Ewing, William Bolton, James Stephenson, and Sharon Ben-Or
Volumetric Analysis of Patients Undergoing Abdominal Wall Reconstruction After Preoperative Progressive Pneumoperitoneum
John Allen, Jeremy Warren, and Joseph Bittle

The Clinical and Economic Impact of a Physical Activity-Based Treatment Program for Severe Obesity
Irfan Asif, Joseph Ewing, Samantha Reid, Nathan Scheweweke, Allyson Hale, Vicki Nelson, and Michael Wiederman

Comparison of Electrocardiographic Interpretation Criteria for Use in Athlete Screening
Elizabeth Barton, Vicki Nelson, Joseph Ewing, Brett Toresdahl, Jonathan Drezner, and Irfan Asif

Understanding Pedal Usage and Foot Movement Characteristics of Older Drivers
Leah Belle, Yubin Xi, Johnell Brooks, Paul Venhovens, Shayne McConomy, John DesJardins, Patrick Rosopa, Kevin Kopera, Constance Truesdail, Nathalie Drouin, Sarah Hennessy, Stephanie Tanner, Jeremy McKee, and Kathy Lococo

Assessing Barriers to Implementing Shared Decision Making
Alexa Bianchi, Brittany Crum, and Meenu Jindal

Early Warning Response System in GHS School-Based Health Centers
Holly Bryan, Laura Rolke, Sarah Griffin, Jacqueline Forrester, Laura Johnson, and Kerry Sease

Nathan Carrington, Bryce Kunkle, Caleb Behrend, Tom Pace, Paul Millhouse, Jeffrey Anker, and John DesJardins

Construction of Chimeric Histone Methyltransferase Complexes in Saccharomyces cerevisiae Generates Unique Phenotypes and Clarifies the Roles of MLL1 and Set1 Complex Accessory Proteins
Renee Chosed, Arnav Lal, David Klein, Emery Longan, Marian Baker, Sasha Gogoli, Jingtian Wang, and Sami Alkoutami

Exercise Programming Correlates With Patient Success in a Comprehensive Pediatric Weight Loss Program
Jenna Crowder, Irfan Asif, Cara Reeves, Kerstin Blomquist, Erin Brackbill, Sarah Griffin, Dorothy Schmalz, Kerry Sease, Laure Utecht, and Vicki Nelson

Supportive Care Metrics for a Community Oncology AYA Program
Elizabeth Cull, John McAlhany, Sarah Taylor, Heather Bowers, Kerri Susko, and Aniket Saha

Beyond Bates: Advanced Physical Exam Series for Medical Students
Ryan Dean and Steven Connelly

Analysis of Positive Responses to 2 Different Heart Health Questionnaires in NCAA Division 1 Athletes
Joseph DeStefano, Hampton Williams, Douglas Reeves, Joseph A. Ewing, and Irfan M. Asif

Evaluation of CarFit Criteria Compliance and Knowledge of Seat Adjustment
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Geographic Variation in the Treatment of Proximal Humerus Fracture in the Medicare Population
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Persistent Functional Neurological Symptom Disorder Spontaneously Remits With ECT Treatment
Raphaela Fontana, Frank Clark, and Benjamin Griffeth

Optimization of Automated Guided Vehicle System in Health Care Facility
Kade Gilstrap, Amogh Bhosekar, Tugce Isik, Sandra Eksioglu, and Robert Allen

Improving Quality to Facilitate Research
Amanda Goode, Katie Daniels, and Matthew Hudson

The Correlation Between Residency Applications and Standardized Behavioral Assessments for Gaining Entry Into a Graduate Medical Education Program
Vincent Green and Ardalan Ahmadi

Self-Perceptions on Fitness to Drive in Collegiate Athletes Following a Sport-Related Concussion
Steven Greene, Yathavan Rajakulasingam, Vicki Nelson, Alex Ewing, and Andrew Albano

Wearable Motion Quantification and Electronic Diaries for Long-Term Monitoring of Parkinson’s Disease
Aaron Hadley, Enrique Urrea Mendoza, Nicola Mennucci, Carol Zimmerman, Joseph Giuffrida, Zoltan Mari, Michelle Burack, Ilia Itin, Fredy Revilla, and Dustin Heldman

Micromotion and Strength of the Glenoid Component in Reverse Total Shoulder Arthroplasty
Shannon Hall, David Baxley, Michael Kissenberth, Josh Karnes, Nick Metcalfe, and John DesJardins

Identifying the Profile of Youth Who Present to the Emergency Department for Psychiatric Reasons
Sharon Holder, Dawn Blackhurst, and Eunice Peterson

Biomechanical Effects of Therapeutic Horseback Riding on Balance and Gait Confidence in the Elderly
Anne Marie Holter, Julia Gates, John DesJardins, Kristine Vernon, and Marieke Van Puymbroek

Are We Asking the Right Questions? Screening and Counseling for Environmental Tobacco Smoke Exposure at a Federally Qualified Health Center
Elizabeth Holt, Jackson Pearce, McKenna Luzynski, Matthew Delfino, and Lochrane Grant

The Effect of Fad Diets on Patients’ Perceptions of Health and Disease
Cassidy Hood, Robert Masocol, Alex Ewing, Vicki Nelson, and Irfan Asif

Potential Benefits of a Separate Instrument Setup Room or Induction Room Adjacent to the Operating Room
Brandon Lee, Dee San, Kevin Taaffe, Lawrence Fredendall, Yann Ferrand, Amin Khoshkenar, Alexis Fiore, Anjali Joseph, and Scott Reeves
Leader Mindfulness, Unit Well-Being, and Patient Care
*Chelsea LeNoble, Michelle Flynn, Marissa Shuffler, Nastassia Savage, Sharon Wilson, and Tod Tappert*

Implementation of the Survey of Well-Being of Young Children (SWYC) Form in a Primary Care Office to Improve Screening of Children 2 Months to 5 Years of Age
*Eric Lessard and Sara Ryder Emerson*

Influence of Opioid Referrals on Physical Therapy Outcomes for Patients with Neck and Back Pain
*K. Markut, D. Dunn, A. Lutz, T. Denninger, E. Shanley, M. Kissenberth, and C. Thigpen*

Understanding How Clinicians Use Epic in Clinical Practice: A Time and Motion Study
*Benjamin Martin, Mark Wess, Nicholas Perkins, Renee Tollison, and Ronald Gimbel*

Evaluation of Chronic Lung Disease and Surgical Retinopathy of Prematurity Outcomes After a Change to Bubble Continuous Airway Pressure
*Ara Messamer, Reese Clark, and Felecia Wood*

Cervical Interbody Spacer with Passive Radiographic Fusion Status Indicator
*Paul Millhouse, Md Arifuzzaman, Apeksha Rajamanthrilage, Nathan Carrington, Caleb Behrend, John DesJardins, and Jeffrey Anker*

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*Christy Morris, Terri LaRusso, Annette Dunphy, and Paari Gopalakrishnan*

Increasing Compliance With Consistent Sterile Procedure During Central Line Fluid Changes in the Small Baby Unit of the Neonatal ICU to Decrease the Central Line-Associated Bloodstream Infection (CLABSI) Rate
*Melissa Motes and Michael Stewart*

Two-Year Retest Variability of ImPACT Baseline Concussion Testing in High School Athletes
*Vicki Nelson, Irfan Asif, Kyle Cassas, J. Brandon Harris, J. Aldrin Enabore, and W. Franklin Sease Jr.*

On the Path to Total Knee Arthroplasty
*Alicia Oostdyk, Noor Alshareef, Rasmine Baker, Melanie Cozad, Sarah Floyd, and Paul Siffri*

Can Commercially Available Voice Prompting Automated External Defibrillators (AEDs) Be Utilized Effectively by Grade School Children?
*Sally Peterson, Phillip Moschella, Amy Ramsay, and Dotan Shovrin*

Reducing Burnout and Improving Meaningful Work Through Medical Resident Poverty Simulation: A Pilot Study
*Cameron Pfennig and Chelsea LeNoble*

Initiation of an Osteoporosis Treatment Program at Our Institution
*Drew Ratner, Billy Clark, Amy Trammell, Laura Boineau, and Kyle Jeray*

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*Paige Reed, Jeff Edenfield, and Carlos D. Garcia*

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Caring for Caregivers: Identifying Personality Risk Factors in Burnout Development
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Impact of an Alert Reduction Strategy on Pharmacist Alert Override Rates Within a Clinical Decision Support System
John Schoonover, Becky Sawyer, Lucy Crosby, Alyson Ghizzoni-Burns, and Jun Wu

Using Epic to Measure Referral Rates by Greenville Health System Pediatricians to Developmental and Behavioral Support Services
Megan Schmalz, Julia Moss, Jacqueline Forrester, Sarah Griffin, Christopher Wilson, and Kerry Sease

Stability of Parkinson’s Disease Subtypes Based on a Cluster Analysis in a Large Cohort

Comparing Telephone-Based Diabetes Education to Resident Clinic Standard of Care in Uncontrolled Type 2 Patients With Diabetes
Henry Schwartz, Caroline Clary, Gail Chastain, and Meenu Jindal

Comparison of High- vs. Low-Fidelity Simulation Models for AHA CPR Training in Middle School Students
Bijal Shah, David Wong, Sally Peterson, Phillip Moschella, Amy Ramsay, and Dotan Shvorin

Return to Sport as Outcome Measure for Shoulder Instability
Ellen Shanley, Charles Thigpen, Lauren Ruffrage, Douglas Wyland, Michael Kissenberth, and John Tokish

Assessing an Exercise Vital Signs in Pediatric Patients
Emily Sherrard, Robert Masocol, Irfan Asif, J. Alex Ewing, and Vicki Nelson

Critical Social Thinking and Mindfulness Skills as Levers for Facilitating Health Care Unit Engagement and Unit Climate for Patient Safety
Marissa Shuffler, Chelsea LeNoble, Michelle Flynn, Dana Verhoeven, Nastassia Savage, Pamela Farago, Tiffany Cooper, Sharon Wilson, and Terrie Long

Strategic Development of a Research Experience Enrichment Program (REEP) in the Emergency Medicine Department
Dotan Shvorin, Ronald Pirrallo, Kevin Taaffe, and Phillip Moschella

Statin Shared Decision Making and Patient Education Study
Brittany Kizer Stovall, Alexa Bianchi, and Meenu Jindal

Early Treatment Innovation for Opioid-Dependent Newborns: A Retrospective Comparison of Outcomes, Utilization, Quality, and Safety, 2006-2014
Julie Summey, Liwei Chen, Rachel Mayo, Elizabeth Charron, Jennifer Hudson, Windsor Westbrook Sherrill, and Lori Dikes

Reduction in Type 2 Diabetes Markers With Longer Duration of Breastfeeding in the Peri/postnatal Epigenetic Twins Study (PETS): Theoretical Epigenetic Mechanisms
Heide Temples, Yuk Jing Loke, William Bridges, Richard Saffery, and Jeffrey Craig
New Public Health Partnership: GHS Emergency Department and SC DHEC HIV Surveillance Program
Ben Theobald, Jockie Barnabe, and Phillip Moschella

Cardiorespiratory Health, Muscular Strength/Endurance and Fat Free Mass Are Improved After 12 Weeks of Exercise Therapy in Cancer Survivors
Jennifer Trilk, Ryan Porter, Noreen Denham, and W. Larry Gluck

Using X-ray Excited Luminescent Chemical Imaging (XELCI) to Image Changes in pH on the Surface of Implanted Medical Devices in Order to Detect and Monitor Implant-Associated Infection
Unaiza Uzair, Donald Benza, Fenglin Wang, Yash Raval, Tzuen-Rong Tzeng, Caleb Behrend, and Jeffrey Anker

White Coat Syndrome in the Obese Pediatric Population: The Case for Ambulatory Blood Pressure Monitoring
Scott Walters, Ransome Eke, Hannah Kline, Shane Sundlie, Kerry Sease, and Jonathan Markowitz

Prophylactic Placement of Permanent Synthetic Mesh at the Time of Ostomy Closure Prevents Incisional Hernia Formation
Jeremy Warren, Lucas Beffa, Alfredo Carbonell, Jennifer Cull, Brent Sinopoli, Joseph Ewing, Cedrek McFadden, Jay Crockett, and William Cobb

Randomized Controlled Trial of a 4-week Mindfulness Intervention Among Cancer Survivors
Michael Wirth, Regina Franco, Sara Wagner Rabb, Katie Daniels, Kerri Susko, Matthew Hudson, and Mark O’Rourke

Immediate and Delayed Retention of Stroke and Healthy Lifestyle Education Among Middle School Students
2018 GHS Residents and Fellows

**Family Medicine**
Joel Rhein Amidon, MD
Mohamed Balout, MD
Courtney Lynn Duffy, MD
Sheelah Orinion Gervacio, MD
Eric Lessard, MD
Laura Mary Morrison, MD

**Primary Care Sports Medicine**
Elizabeth Eleanor Barton, MD
Jenna Lynn Crowder, MD

**General Surgery**
MacKenzie Johanna Bartz, MD
William John Berglind, MD
Kyle Vernon Conway, MD
Ashley Jana Marie Jones, MD
Sean Patrick McGrath, MD
Katherine Ferstadt Pellizzeri, MD

**Minimally Invasive Surgery**
John Michael Allen, MD
David Gregory Pearson, MD

**Vascular Surgery**
Brian Michael Freeman, MD
Jonathan Jay Sexton, MD

**Internal Medicine**
Mary Crouse Blumer, MD
Caroline Rebecca Clary, MD
Bonnie Elizabeth DeBusk, DO
Michael Joseph Haden, MD
Sheena Marie Henry, MD
John John, MD
Catherine Lea Morris, MD
Rachel Anne Quaney, MD
Kerolos George Rizk, DO
Laura Emily Roache, DO
Henry Vernon Schwartz III, MD
Ashton Scott Townsend, DO

**Internal Medicine/Pediatrics**
Craig Michael Anderson, MD
Marla Turner Chapman, MD
Clay Martin Crosby, MD
Katie Lauren Mclemore McQueen, MD
Dennis Ryan Paulk, MD
Laura Dopson Almquist, MD
Charis Nailah Chambers, MD
Kelly Whittaker Kline, MD
Lauren Jamison Pinckney, MD
Katie Mellington Vemireddy, MD
Andrew James White, MD

**Orthopaedic Surgery**
Aneel Kumar Jiwanlal, MD
Michael Robert Koerner, MD
Mark Christian Daniel Moody, MD
Drew Alan Ratner, MD
Joel Robert Campbell, MD
John Larson Glomset, MD
Ryan Stephenson Rowland, MD
Lane Nicholas Rush, MD

**Orthopaedic Sports Medicine**
Joel Robert Saul, DO

**Pediatrics**
Eric Michael Bankert, DO
Meghan Skinner Jordan, MD
Lindsey Brianne McAmis Gouge, MD
Matthew Christopher McGee, MD
Ashtin Danielle Nix, MD
Colton Lee Ragsdale, MD
Christine Nabil Riyadh, MD
Andrea Julia Stoichita, MD
Grace Ann Twitty, MD
John Robert Winningham, MD
Victoria Lynnette Winningham, MD

**Developmental-Behavioral Pediatrics**
Steven Hsiang-Yu Ma, MD

**Pharmacy**
Alyssa Marie Gaietto, PharmD
Christopher Michael Nalli, PharmD
Amy S. Robinson, PharmD
John Hunter Schoonover, PharmD
Allyson Sleeman, PharmD
Patrick D. Walker, PharmD
Brittany M. Wills, PharmD

**Psychiatry**
Lisa Bush Bostic, MD
Ryan Ashley Greene, MD
Nahid Nadiri, MD
Andrew J. Ruege, MD
Joel Robert Saul, DO
USC School of Medicine Greenville Class of 2018

Alyssa Adkins
Kenzie Alexander
Carly Atwood
Bobby Baranello
Janet Basinger
Leighann Black
Joey Blackwell
Ethan Brown
Andrew Buhr
Stefano Cardin Pozo
Krupesh Dave
Raquel Denis
Phillips DeRidder
Catherine Enriken
Hannah England
David Erazo
Brian Fazzone
Alicia Firestone
Tim Fletcher
Megan Fredwall
Jordan Gainey
Anne Marie Gerstner
Taylor Girolamo
Kalie Goodman
Mike Granade

Scott Griffin
Tee Griscom
Wes Hardgrove
Harry Hicklin
Cody Hill
Michael Hood
Meghan Hudak
Stephen Hudson
Eleasa Hulon
Calley Huntsinger
Sven Ivankovic
Brian Jones
Matt Kerr
Hannah Kline
Brittany Lamont
Alex Lea
Andrew Lee
William Lightle
Jordan Malray
Whitney Mayberry
Katrina Morgan
Gabrielle Morris
Wes Parker
Shuler Polk
Ben Ramsey

Natalia Rincon
Julia Robison
Greg Roop
Taylor Rozier
Ella Shreder
Hannah Shull
Jasmine Smith
Noah Smith
Crystal Sosa
Grace Spencer
Mark Spencer
Hope Sprunger
Clay Stafford
Bianca Stewart
Shane Sundlie
Andrew Swartz
Nate Teague
Lauren Ashley Tipton
Mary Van Wert
Casey Wang
Shannon Wentworth
Jeremiah White
Jessica-Ashley Williams
Bailey Wooten
Sara Yi
2018 Publications of Greenville Health System Medical and Scientific Staff

Emergency Medicine


18. Taylor R, Blackhurst DW, Moschella PC. 361 patient experience scores are affected by timing of survey administration in an urban
Family Medicine


30. Mitchell-Bennett L, Zolezzi M, LuBeth P, Saldana M, Vatcheva K, Meyer L, Patterson SF, Reininge B. Coordinated care beyond clinical settings for patients with uncontrolled diabetes. Published online Nov 2017 as part of the American Public Health Association Annual Meeting, Atlanta, GA.


Medicine


60. Hakimi R, Hierholzer S. Aorto-tracheo/pulmonary fistula from squamous cell carcinoma leading to cerebral air embolism. Published online March 2018 as part of the American Society of Neuroimaging Annual Meeting, Austin, TX. DOI: org/10.1111/jon.12507.


68. Lodise TP, Schrann JH. The emperor’s new clothes: prospective observational evaluation of the association between the day 2 vancomycin exposure and failure rates among hospitalized patients with MRSA bloodstream infections (PROVIDE). *Open Forum Infect Dis.* 2017;4(suppl 1):S30-1.


71. Muench SC, Akiyama MJ, Heo M, Litwin AH.


75. Pahlavanzadeh M, Hakimi R. Lumbar puncture as a treatment for IVH in patients with a good neurological examination. Published online March 2018 as part of the American Society of Neuroimaging Annual Meeting, Austin, TX. DOI: org/10.1111/jon.12507.


**OB/GYN**


90. Chang HJ, Yoo JY, Kim TH, Fazleabas A, Young SL, Lessey B, Jeong JW. Overex-


92. Eichelberger K. The association between assisted reproduction technology (ART) and abnormal placentation. BJOG. 2018 Jun 13. PMID: 29900643.


Orthopaedics


172. Markowitz JE. Safety and efficacy of reslizumab for children and adolescents with eosino-


Psychiatry


Radiology


2018 PUBLICATIONS

194. Gainey J, Brechtel L, Konklin S, Madeline LA, Lowther E, Blum B, Nathaniel T. In a stroke cohort with incident hypertension; are more women than men likely to be excluded from re-combinant tissue-type Plasminogen Activator (rtPA)? J Neural Sci. 2018;387:139-46.


Surgery


2018 PUBLICATIONS


In 2016, the Duke doctors said they had no treatment, no hope, for the rare tumor that had started in my jaw and was now multiplying in my lungs. My husband and I drove the 240 miles home, “six months to live” echoing between us.

Then, a church friend told me that the first trial anywhere for my rare tumor was starting at GHS Cancer Institute.

I had no idea!

The only rare tumor center of its kind in the U.S. is part of our institute. Now, thanks to its immunotherapy trial and our prayers, my 100+ tumors have disappeared!

The GHS Cancer Institute gave me hope, and a tomorrow. It’s the story everyone deserves. ”
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