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MEDICAL
PARTNERSHIP

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13th Annual
Medical Partnership
Student Research
Symposium



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UGA Center for Continuing Education
Mahler Hall



*Welcome to the thirteenth annual
AU/UGA Medical Partnership
Research Symposium!*

This event is an opportunity to showcase the activities of our students during the summer between the first and second years of their medical studies. Students were encouraged to engage in a scholarly activity which could include laboratory science, clinical, or other research. Students more interested in a participatory clinical experience were encouraged to also engage in “inquisitive observation and reflection” in order to derive a more complete understanding of the health problems within the context of the greater community.

The posters represent the results of the students’ endeavors. We are grateful to all of the faculty members at AU, UGA, and other institutions, who have mentored the students, and to the community clinicians, both in Athens and elsewhere, who have shared their expertise and provided the clinical settings to learn both the art and science of doctoring.

Michelle A. Nuss MD

Michelle A. Nuss, MD
Campus Dean

Symposium Events

- 1:00 – 2:30 PM *Poster Session*
- 2:45 – 3:15 PM *Welcome from Dean &
Elevator Pitch Finalists*
- 3:20 – 3:45 PM *Oral Presentations*
- 3:45 – 4:00 PM *Awards*

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Twenty Year Experience of a Single Institution Outcomes for Early-Stage Hodgkin Lymphoma

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BACKGROUND: ABVD is the current standard treatment for Early-Stage (Stages 1-2) Hodgkin Lymphoma (HL). Radiotherapy in addition to chemotherapy may lead to better survival rates but has become controversial due to concerns about long-term toxicity. A retrospective review was conducted to observe the outcomes of patients receiving ABVD alone vs ABVD with consolidative radiotherapy (CMT).

METHODS: We conducted a retrospective review of patients with HL diagnosed from 2000-2014 to compare the outcomes of ABVD vs CMT. Inclusion criteria included patients ≥ 18 years of age, stages 1 or 2 HL, who received ABVD chemotherapy with a complete response with/without radiotherapy, and had a date of last follow-up. Radiotherapy must have been started within 90 days of end of chemotherapy regimen to ensure the radiation was consolidative. Follow up details and treatment response details were obtained from medical oncology and radiation oncology records in EMR system. Response details were supplemented by looking at post treatment imaging reports. Patients were deemed alive until last follow-up and/or until known date of death. Standard statistical analysis was performed and included Kaplan-Meier to estimate relapse-free survival (RFS).

RESULTS: 114 patients with Early-Stage HL fit the inclusion criteria. Of these, 56 received consolidative radiation, 49 did not receive any radiotherapy. The median age at diagnosis was 30 years, the majority of patients (65%) were female, 66% were Caucasian, 89% of the patients were in Stage II, 89% had an ECOG score of 0 or 1, 63% did not experience any B symptoms, and 89% had no extra nodal involvement. On average, the patients underwent 5.43 cycles of chemotherapy (range: 2-6). The percentage of patients receiving consolidative radiation was 53% with the average radiation dosage being 30.31 Gy (range: 21.0-55.8). Poor prognosis was significantly associated with presence of B symptoms. The 1-year and 5-year RFS for the patients who received just ABVD were 75% and 55%, respectively. The 1-year and 5-year RFS for the patients who received CMT were 97% and 85%, respectively.

CONCLUSIONS: ABVD with consolidative radiotherapy resulted in improved relapse-free survival rates. Further studies of advanced stages and non-favorable HL are warranted.

Quadriceps Strength after TKA: A Comparison of a Medial Pivot versus Posterior Stabilized Knee Design

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BACKGROUND: Quadriceps muscle strength following total knee arthroplasty (TKA) has been shown to be an indicator of post-op outcomes. The purpose of this prospective randomized control trial is to evaluate the impact of knee design on the rate of return of quadriceps strength by comparing patients who underwent primary total knee arthroplasty with either a medial pivot (MP) or a posterior stabilized (PS) implant design.

METHODS: 100 patients undergoing primary TKA enrolled and split into two cohorts. Group 1 (MP) 50 patients received the same medial pivot implant from a single surgeon and group 2 (PS) 50 patients received the same posterior stabilized implant from a different surgeon. Quadriceps strength was measured at 90 degrees, 45 degrees, and 15 degrees of knee flexion using a standard hand-held dynamometer (HHD). Measurements were conducted pre-operatively within two weeks of the index surgery and at 6 weeks, 6 months, and one year post-operatively. Patients' post-operative data was normalized to their pre-operative baseline to eliminate variability amongst subjects. A 30 second sit-to-stand test was performed along with the dynamometer measurements as an additional measure of overall quadriceps strength.

RESULTS: The MP group demonstrated greater strength at all flexion angles post-op, with the 15 degree and 45 degree measurement showing a significant difference at one year post-op, and the 90 degree measurement showing a significant difference at 6 months post-op ($p < .05$). Regarding the sit-to-stand measurements, the MP group was significantly better at all post-op measurements, 6 weeks, 6 months, and one year ($p < .05$).

CONCLUSION: The MP design demonstrated statistical superiority both in flexion strength testing and sit to stand testing at various points post-operatively. Overall, the sagittally stabilized design of the medial pivot knee seems to provide faster return of quadriceps strength after total knee arthroplasty.

Utilization of Advanced Heart Failure Pharmacotherapy in Patients with Tachycardic Induced Cardiomyopathy

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BACKGROUND: Tachycardia Mediated Cardiomyopathy (TMC) is a reversible cardiomyopathy that arises from sustained elevation in heart rate during supraventricular tachycardias. Current guidelines for the treatment of cardiomyopathies include a series of newer pharmacologic therapies including mineralocorticoid receptor antagonists, SGLT2 inhibitors, and combined Sacubitril/ Valsartan. For patients with atrial fibrillation, restoration of sinus rhythm can lead to normalization of Left Ventricular Ejection Fraction (LVEF) without advanced heart failure medications (AHFMs). There are no studies, however, that examine whether patients with reversible cardiomyopathies should be started or maintained on these expensive medications.

METHODS: A retrospective chart review was performed on patients at Piedmont Athens Regional who underwent direct current cardioversion (DCCV) for treatment of A-fib between January 1, 2021, and January 1, 2022. Patients were determined to have a recovered LVEF if their LVEF declined below 50% and then recovered and remained above 50%. Management of these patients was compared between patients who enrolled in advanced heart failure clinics (HFCs) and those who did not.

RESULTS: Of the 82 patients with a reduced LVEF prior to DCCV, 47 patients (57.3%) had a recovered LVEF. In these patients, no significant difference was seen amongst those who were placed on AHFM (25/47 patients) versus those who were not (22/47 patients) ($p=.70$). Of the 22 placed on AHFM, 12 (54.5%) were maintained on at least 1 AHFM for longer than one year after recovery of LVEF; with 11/12 of these patients enrolled in the advanced HFCs.

CONCLUSIONS: The benefit of AHFMs in the treatment TCMs has not been defined. In our retrospective study, neither the initiation of AHFMs prior to cardioversion, nor their continued utilization following restoration of LVEF, improved outcomes. Future studies are needed to define the role of AHFMs in the treatment of reversible cardiomyopathies.

Identifying the NOTCH receptor(s) required for JAGGED1 signaling and determining its role in Human bone-derived osteoblast-like cell (HBO) differentiation.

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BACKGROUND: Craniofacial bone loss in children is a challenging clinical problem resulting from defects that occur during early embryonic development. In Alagille syndrome this occurs due to a single nucleotide polymorphism in JAGGED1 or NOTCH, leading to cardiac, liver, and craniofacial bone mineral abnormalities. These defects occur due to the role of JAGGED1-NOTCH signaling in osteoblast commitment and proliferation. Using in-vitro models, this project aims to identify the NOTCH receptor(s) involved in JAGGED1 signaling and its importance to HBO cell differentiation.

METHODS: HBO cells were first isolated from healthy fibular bones of pediatric patients, expanded, and maintained using appropriate culture media. After reaching 100% confluency, they were seeded into a 24-well-plate where different treatments were introduced in triplicates. The treatments were as follows: immobilized JAGGED1, NOTCH1 antibodies, NOTCH1 antibodies + JAGGED1, NOTCH2 antibodies, NOTCH2 antibodies + JAGGED1, NOTCH1 and NOTCH2 antibodies, NOTCH1 and NOTCH2 antibodies + JAGGED1, and 2 untreated wells. After collecting lysates, a BCA assay and Luminex-based multiplex assay were done to detect nine molecular phosphorylated signaling targets. The results were compared using a heatmap.

RESULTS: The heatmap illustrated that wells treated with JAGGED1 alone displayed the most signaling, as expected given there were no inhibitors to NOTCH. Wells treated with NOTCH1 antibodies and JAGGED1 or NOTCH2 antibodies and JAGGED1 had a decrease in signaling. Wells treated with NOTCH1 and NOTCH2 antibodies + JAGGED1 demonstrated an additive inhibition of signaling.

CONCLUSION: NOTCH1 and NOTCH2 antibody treated JAGGED1-induced HBO cells demonstrated reduced Luminex signaling, which was additive. Future experiments that knock down NOTCH3, NOTCH4, and a combination of all four NOTCH receptors can be done. These data will characterize the role(s) of the Notch receptors on JAGGED1 signaling on HBO cells.

The Role of Macrophages in Age-Related Macular Degeneration

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BACKGROUND: Age-related macular degeneration (AMD) is the leading cause of blindness among people 50 years or older. Prior research in animal models has shown that CD163+ macrophages play a role in AMD, however not much is known about how these macrophages influence disease progression in humans.

METHODS: Histopathological analysis of 105 (56 Grade I, 49 Grade IV) postmortem eyes with high risk drusen (HRD) was conducted. The postmortem eyes were graded using the Sarks classification system for AMD. Eyes in stage I (normal controls) and stage IV (intermediate AMD) were then stained for bone-marrow derived CD163+ macrophages as well as yolk-sac derived CD68 macrophages, RPE65 (RPE), or Synaptophysin (synapses). These slides were then imaged and analyzed using the Nuance software to calculate the percent area of CD163+, the percent area of each additional biomarker, and the percentage of co-localization between the two markers.

RESULTS: In the CD163+/CD68 slides, all three evaluated components were significantly higher in Sarks IV compared to Sarks I for the inner retina. However, Sarks I had significantly higher percent co-localization and percent area of CD68 in the choroid. For CD163+/RPE65, the inner retina expressed a higher percent area of RPE65 and CD163+ in Sarks IV compared to Sarks I. The choroid was significant for an increase in the percent area of RPE65, while the outer retina was significantly higher for all three components in Sarks IV. In CD163+/Synaptophysin, the inner and outer retina showed a significant increase in Sarks IV for all three evaluated components, while the choroid was significantly higher in the percent co-localization and percent area of synaptophysin in Sarks IV.

CONCLUSION: Our results demonstrate a positive association and co-localization between CD163+ macrophages and CD68 macrophages, RPE65 (RPE), or Synaptophysin in the retina. These findings suggest synaptic damage in the presence of increased CD163+ cells in intermediate AMD.

Investigating the Impact of Radiofrequency Electromagnetic Radiation (RF-EMR) Emitted from Cell Phones on Genetic Variants in Human Sperm: An In-vitro Study

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BACKGROUND: Mobile devices play a crucial role in communication. These devices emit radiofrequency-electromagnetic radiation (RF-EMR), which the human body can absorb. These technologies elevate testicular temperature and potentially harm spermatogenesis. However, the underlying mechanism of how cell phone radiation can impact sperm quality is not well understood. One possible explanation is through RF-EMR-induced genetic changes in sperm.

METHODS: It was a prospective experimental interventional study. Six healthy, fertile men aged 25-35 years, abstinent for three days, provided semen samples. Samples initially underwent a standard semen analysis (WHO 5th edition). Afterwards, samples were exposed for six hours to a current-generation smartphone connected to WiFi-calling through WhatsApp as an RF-EMR source. Semen samples were further analyzed and sent to the Hussman Institute for Human Genomics. The facility extracted the DNA before and after RF-EMR exposure to perform whole exome sequencing (WES) with alignment to the reference genome.

RESULTS: Significant decrease in sperm progressive motility and viability were observed ($P < 0.05$) after RF-EMR exposure. The median number of exonic, nonsynonymous variants increased to 4 (IQR). Across the four successfully sequenced samples, 20 new, exonic, nonsynonymous variants were found after the RF-EMR exposure. Specifically, 12 variants were expressed in male reproductive tissues, in which five were involved with ciliary function, and two were related to mitochondrial function.

CONCLUSIONS: Based on this study, we observed a decrease in sperm progressive motility, viability, and an increase in potential genetic variants associated with sperm motility following RF-EMR exposure. These preliminary results shed light on further work investigating the effects of RF-EMR exposure on semen parameters with large sample sizes to determine the clinical significance of these genetic variants.

A Protocol for Isolating and Culturing Enriched Colonies of Primary Human Osteoblasts and Osteoclasts from Trabecular Bone

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BACKGROUND: Primary human osteoblasts and osteoclasts are understood to be two major players in bone remodeling. Researchers have sought different ways to create an in vitro model for testing their function to understand this process. Up to now, most protocols have isolated human osteoblasts from bone and derived osteoclasts from mesenchymal stem cells to create such models, though this strategy does not fully capture the activity of terminally differentiated osteoclasts isolated from bone. By isolating both primary human osteoblasts and osteoclasts from trabecular bone, we sought to create a model that more accurately captures the presence and activity of these cells in vitro, to lay the groundwork for further testing on them.

METHODS: We acquired bone samples from 6 patients who underwent craniofacial reconstructive procedures. To detach cells from the mineralized matrix, we minced and digested the samples. We then separated the cells via fetal bovine serum (FBS) gradient decantation into three layers, with 0% FBS (0FCS), 40% FBS (40FBS), and 70% FBS (70FCS). We cultured the cells and measured osteoblastic function and osteoclast count. We expected the denser osteoclasts to be in high concentration in 70FCS and for osteoblasts to reside in 40FCS.^{1,2,3}

RESULTS: We observed a higher percentage of osteoclasts in our 70FCS layer (46.1% vs 18.75 & 15.4% in 0FCS and 40FCS). Though not statistically significant, we also observed a trend of higher ALP activity in 0FCS and 40FCS (.059 & .051 vs .030 units/mg protein in 70FCS).

CONCLUSIONS: We developed a protocol that allowed us to obtain an enriched population of human osteoclasts. It also demonstrated potential for obtaining an enriched population of human osteoblasts with further sample acquisition and combination of 0FCS and 40FCS.

Does socioeconomic status and distance from hospital affect patient outcomes for ischemic stroke?

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BACKGROUND: Each year in the United States, more than 795,000 adults suffer a stroke, which is the leading cause of serious long-term disability. Time-sensitive factors, like distance driven to the hospital, and others, like socioeconomic status (SES), could be significant for a patient's outcome. Treatment depends on the last known well time (LKWT) to arrival time and has been shown to be associated from distance driven to hospital. Previous studies have shown that a low SES status is associated with more adverse outcomes. In this study, we aim to see if these patterns are consistent with ischemic stroke patients at Piedmont Athens Regional (PAR) hospital.

METHODS: 268 patients with confirmed ischemic strokes admitted to PAR between 2019-2022 were analyzed in a retrospective chart review. Distance from the patient's residence to the hospital was gathered in the initial data. A disadvantage score based on a patient's zip code from the National Neighborhood Data Archive (NaNDA) was used as a proxy measure for SES. Length of stay at PAR, the Modified Rankin Score (mRS) at discharge, and LKWT to arrival time were used as outcome measures.

RESULTS: Linear regression showed a significant positive association between the miles driven to PAR and LKWT and arrival time ($p = 0.02$), such that people who live farther away had a larger gap between LKWT and arrival. There was a trend indicating a longer length of stay for patients with a higher disadvantage score ($p = 0.07$) and better mRS scores at discharge for patients living farther away ($p = 0.08$).

CONCLUSIONS: Distance from the hospital and SES both had an effect on the timing of care and outcomes after ischemic stroke. Patients with a lower SES had longer length of stay, and interestingly, a better outcome was correlated with a longer distance from the hospital, although further research is needed to determine why.

Rates of discontinuation of amiodarone following post-CABG/MVR/AVR Atrial Fibrillation

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BACKGROUND: Amiodarone is a commonly prescribed anti-arrhythmic drug with a myriad of side effects used to treat arrhythmias such as atrial fibrillation. New-onset atrial fibrillation commonly arises after coronary artery bypass grafting with associated morbidity and mortality. Management often includes amiodarone, with its attendant adverse effects.

METHODS: Retrospective quality improvement study of all patients undergoing CABG at the Piedmont Heart Institute in the Athens and Atlanta campuses between 2020 and 2022. Patient data was abstracted from the prospective STS database and retrospectively from the patient medical record. Data from patients who developed post-operative atrial fibrillation and were discharged on amiodarone was abstracted to determine whether patients were maintained on long term amiodarone, received appropriate screening for end organ complications (LFTs, TFTs, and PFTs) arising from amiodarone use, and were referred to cardiac electrophysiology.

RESULTS: Out of the 330 patients discharged on amiodarone, 34 patients (10.3%) were maintained on amiodarone for longer than 6 months. Of the individuals who were maintained on long-term amiodarone, 16 out of 34 (47.1%), 17 out of 34 (50%), and 4 out of 34 (11.8%) had a TSH, LFT and PFT lab conducted during a 12-month period, respectively. 16 out of 34 (47.1%) were referred to EP, and 3 out of 34 (8.8%) subsequently received an atrial fibrillation ablation.

CONCLUSION: Patients undergoing CABG who develop post-operative AF are commonly prescribed amiodarone but often do not receive appropriate preventative screening for amiodarone related toxicities, referral to electrophysiologists or definitive therapies. System processes need to be developed to improve patient outcomes.

Assessing the Impact of Medrol Dose-Paks on Patients Undergoing Primary Total Knee Arthroplasty Procedures: A Single Surgeon Retrospective Review

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BACKGROUND: Total knee arthroplasty (TKA) is commonly used to treat end stage osteoarthritis. While effective, postoperative pain is a problem many patients experience. The pain can be managed with opioids, but there are side effects associated with their use. One way to minimize these side effects is by utilizing methylprednisolone, an oral glucocorticoid, in a 6-day taper course (Medrol dose-pak). By comparing the complication rate in patients prescribed a Medrol dose-pak to those who were not, we hope to show that Medrol dose-paks are a safe way to minimize postoperative pain and opioid-related side effects following TKA.

METHODS: 698 patients who underwent primary TKA at Emory University from 2018 to 2023 with a minimum follow up time of 90 days were included. Demographics, comorbidities, and complications were recorded from patient charts in Epic Systems and Powerchart. Categorical variables were analyzed using a Chi-squared test and t-tests were used for quantitative variables. Univariate analysis of postoperative complications was carried out between cohorts using Chi-square and t-tests. Statistical significance was considered at $P < 0.05$. All statistical analysis was carried out using R studio.

RESULTS: The univariate analysis of objective outcomes showed no significant difference for any of the complications of interest (Prosthetic joint infection, periprosthetic fracture, wound complication, instability, VTE, revision rate, 90-day readmission, etc.). There was no significant difference between patient reported outcomes (persistent post operative pain, stiffness, neurologic deficits).

CONCLUSION: The administration Medrol dose-paks did not show an increase in either objective or subjective complication rate following TKA, showing they may be used safely in addition to opioids. Further research must be done to show the efficacy in minimizing pain, nausea, and opioid consumption following TKA.

An Analysis of the Clinical Significance of Airway Epithelial Endoplasmic Reticulum Stress in Tobacco-Exposed People With and Without COPD

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BACKGROUND: Chronic obstructive pulmonary disease (COPD) is a major contributor to global morbidity and mortality. Cigarette smoking is a significant risk factor for COPD, causing protein damage leading to endoplasmic reticulum (ER) stress in airway epithelial cells. The course of COPD is heterogeneous, with phenotypic variations in progression and treatment responsiveness. A subgroup of COPD patients has airway gene expression signatures of type-2 (T2) inflammation, which is associated with “asthma-like” features and preferential response to inhaled corticosteroids. In asthma, interferon and T2-driven inflammation are associated with airway epithelial ER stress and may present a common pathway of airway injury. The importance of ER stress in COPD is less well understood.

METHODS: Within SubPopulations and Intermediate Outcome Measures In COPD Study (SPIROMICS), RNA-seq on airway epithelial brushings was conducted for patients with a history of cigarette smoking ≥ 20 pack-years with and without COPD, along with healthy non-smoking controls [n=161]. Regression methods were utilized to determine ER stress gene signature association with baseline clinical measurements and inflammatory gene signatures. Hierarchical clustering identified subgroups of smokers who share elevations in ER stress marker genes.

RESULTS: Correlation analysis across all participants at baseline revealed significant positive associations between increased ER stress and current smoking, COPD Assessment Test score, dyspnea severity, chronic bronchitis diagnosis, and exacerbations in the prior year. In smokers, gene markers for ER stress were increased in COPD in association with T2 and interferon-driven inflammation.

CONCLUSION: Airway epithelial ER stress is cross-sectionally associated with airway inflammation in smokers, as well as increased symptoms and exacerbations. These data suggest that cigarette smoking-induced ER stress may play a role in driving asthma-like airway inflammation in COPD.

Does Insurance Provide Enough Physical Therapy Visits for Common Orthopaedic Conditions? A Survey Study

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BACKGROUND: There is often a disconnect between physical therapists' recommended number of physical therapy (PT) sessions and what insurance companies cover for orthopedic pathologies. This study aims to assess whether insurance-approved visits align with therapists' recommendations and hypothesizes that insurance coverage may be insufficient for most orthopedic pathologies.

METHODS: This was a prospective observational survey study. The survey collected data on the average number of PT sessions necessary for a complete recovery as recommended by physical therapists for 11 orthopedic diagnoses. Information on the number of visits covered by insurance companies was obtained. The recommended number of visits by therapists was compared to the insurance data to assess discrepancies.

RESULTS: The recommended number of PT visits (n=251 therapists) varied ranging from 11.3 to 37.3 visits with the overall average being 23.8. Medicare, Medicaid, UHC, and Aetna covers all medically necessary visits. Other companies have a maximum of 25-30 visits per year or do not have a maximum visit number but have an initial limit to number of visits before requiring another authorization. ACL reconstructions, rotator cuff repairs, shoulder anterior labrum repairs, anatomic shoulder replacements, and reverse shoulder replacements require the highest number of visits leading to the most discrepancies in insurance coverage. 24% of physical therapists believed coverage was adequate, 48% believed that coverage was inadequate, and 28% gave a neutral response.

CONCLUSION: This study highlights the disparity between recommended and insurance covered PT visits for common orthopedic pathologies. Most insurance plans don't automatically provide enough coverage, leading to potential disruptions in patient treatment and difficulties in obtaining additional visits when needed. The results emphasize the need for policy changes to ensure patients can access appropriate physical therapy without delays.

Assessing Impacts of Healthcare Provision Quality and Financial Barriers on Chronic Health Conditions Among Transgender/Gender Minority Adults

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BACKGROUND: Chronic health conditions such as chronic obstructive pulmonary disease (COPD), smoking, and cannabis use are exacerbated in transgender/gender minority (TGM) populations. Healthcare access barriers such as financial ability and treatment provision quality are hypothesized to be potential trans minority stress factors that explain related health risks. Nonetheless, no research has shown whether healthcare access barriers lead to disparities in chronic health conditions in TGM adults.

METHODS: We utilized generalized linear regression models applied to data from the All of Us Research Program (n= 373,015, TGM n= 4,216) to first assess associations between TGM (vs. cisgender) identity and health conditions (smoking, cannabis use, and COPD) and healthcare access barriers (healthcare treatment quality and financial ability to pay). We then used mediation analysis to explore whether healthcare access barriers explain disparate substance use and COPD diagnosis rates among TGM adults.

RESULTS: Controlling for key demographics, findings showed TGM adults experienced moderately worse treatment quality ($\beta = -0.43$, 95% CI = [-0.37, -0.47]) relative to cisgender adults; however, TGM sample did not differ in financial strains. Moreover, TGM adults reported 15% lower odds of cigarette use (95% CI = [0.08, 0.21]), but were no different in marijuana use or COPD likelihood, while LGBTQ adults were higher in cigarettes and marijuana use. Mediation findings suggested poorer quality healthcare provision explained small elevations in cigarette and marijuana use risk among TGM adults.

CONCLUSION: These findings contribute to understanding the impact of healthcare access barriers on chronic health conditions in TGM populations. TGM adults may have greater healthcare inequities in terms of quality treatment provision, but no current evidence of greater financial hardship compared to cisgender adults. Limitations may be measures utilized within the All of Us Research Program that may not reflect the historical experiences of the community.

“Do you care that your patient doesn’t have a roof over their head?”: Patient perspectives on social determinants of health considerations in cancer care

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BACKGROUND: While it is known that social determinants of health (SDOH) affect cancer outcomes, the implementation of SDOH screening and intervention within oncology settings is not yet well understood. This study examined stakeholder perspectives on the implementation of SDOH screening and intervention.

METHODS: Qualitative interviews were conducted with 21 adults who had received cancer treatment and lived or received treatment within the PSCI catchment area. Qualitative interviews were coded deductively for major themes and inductively for subthemes.

RESULTS: Three primary themes were identified: challenging experiences, barriers for disclosing SDOH information, and the role of the health system in addressing SDOH during cancer care. Subthemes of theme 1 included financial difficulties, emotional health challenges, insufficient social support, discrimination, and communication challenges. Subthemes of theme 2 included individual attitudes, privacy concerns, unknown outcomes, and patient-provider relationship. Subthemes of theme 3 included acknowledging SDOH, providing referrals and resources, and following up.

CONCLUSIONS: Our findings help inform implementation of SDOH interventions to improve cancer care. Cancer patients may benefit from added support from the health system to address SDOH challenges. In the process, health systems will need to develop methods to educate patients on how sharing SDOH information can benefit them and ensure that patients feel that their SDOH information will remain confidential and will not be used against them. Health systems and providers have a responsibility to address SDOH needs with individualized intervention plans while honoring patients who refuse help.

The Effects of Instituting Step Therapy for Ocular Anti-VEGF Treatment

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BACKGROUND: Anti-vascular endothelial growth factor (anti-VEGF) agents have revolutionized treatment of many retinal diseases. However, because they often must be repeatedly administered in perpetuity, the cost of this new treatment has created new problems. As the cost varies significantly across available anti-VEGF agents, there have been efforts to reduce this growing expense to the health care system. In November 2020, two of the largest insurers in Massachusetts instituted a step therapy requirement, mandating that all new patients requiring ocular anti-VEGF treatment start with the cheapest agent, bevacizumab. The aim of this project is to determine if step-therapy is achieving its intended goal of lowering costs, while still maintaining quality of care.

METHODS: Patients who received their first injection of anti-VEGF medication for age-related macular degeneration, vein occlusion, or diabetic retinopathy since 2016 at MEEI were identified. We then compared patients receiving their first anti-VEGF before and after the institution of step therapy on November 1, 2020.

RESULTS & CONCLUSION: Preliminary analysis indicates the number of bevacizumab monotherapies decreased as expected for those insured by BCBS and AWP. Interestingly, this also occurred across other insurances as well. We are now comparing metrics related to utilization and quality of care before and after the institution of step therapy to better understand the effects of this policy change.

Incidence of Sexually Transmitted Infections in Youth with HIV Pre-COVID and COVID Era

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BACKGROUND: Adolescents and young adults (AYAs) living with HIV have high rates of co-sexually transmitted infections (STIs). During the COVID pandemic, STI prevention strategies including access to testing and treatment facilities, availability of public health practitioners and healthcare workers, and condom availability may have decreased. The aim of this study was to determine if differences in STI incidence for first infection and re-infection existed between the pre-COVID and COVID eras in a cohort of AYAs living with HIV in Atlanta, GA.

METHODS: Retrospective chart review was conducted for all patients between aged 13-24 at the Grady Ponce Clinic. Two eras were identified: a pre-COVID era (1/1/2009 – 12/31/2019) and a COVID era (1/1/2020 – 6/30/2021). STIs recorded included gonorrhea, chlamydia, human papillomavirus, syphilis, trichomonas, herpes simplex virus, lymphogranuloma venereum, hepatitis C, bacterial vaginosis, and chancroid. First and recurrent incidence rates for any STIs were reported.

RESULTS: Our sample included 766 sexually active AYAs with HIV. 721 patients were included in the pre-COVID era and 583 (80.9%) had at least one STI. 337 patients were included in the COVID era, and 158 had at least one STI (46.9%). The overall first STI incidence rate increased from 42.47 to 58.67 per 100 person-years from the pre-COVID to the COVID era ($p < 0.001$). The recurrent STI incidence rate for any STI also significantly increased from 121.50 to 169.85 per 100 person-years ($p < 0.001$).

CONCLUSION: Our study demonstrated significantly higher incidence rates of first and recurrent STIs in AYAs living with HIV in the COVID era compared to the pre-COVID era. We urge continuation of existing STI prevention programs to avoid secondary clinical and economic adverse effects of increased infections.

Discriminating Sick and Well States in Treatment-Resistant Depression after Deep Brain Stimulation Using Acoustic Features

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BACKGROUND: Patients with severe treatment-resistant depression (TRD) may receive surgical treatments, including deep brain stimulation (DBS). An area of interest regarding DBS for TRD is identification of a biomarker that predicts an improvement in depressive symptoms. Several acoustic features have been proposed as discriminants of sick and well states in depression. However, candidate biomarkers vary between reports and have not been applied to patients who have received DBS for TRD. This study examines acoustic features in a cohort of TRD DBS patients in comparison to depression severity.

METHODS: A cohort of three TRD patients who received DBS in the subcallosal cingulate white matter recorded video diaries twice daily. Acoustic features were extracted using Praat, a speech analysis software. Features of interest were identified by conducting a literature review. Depression severity was measured with daily administration of the CAT-MH, a validated measure of mental health.

RESULTS: Jitter, a measure of vocal fold irregularity, was the only variable that discriminated well and sick states and changed in the same direction for all patients ($t > 2.33, p < .03$). Several additional variables were significantly different for all subjects when comparing sick and well states but did not change in a uniform direction (spectral tilt, Mel Frequency Cepstral Coefficient 3).

CONCLUSIONS: Further investigation into jitter as an acoustic biomarker for discrimination of sick and well states in TRD patients receiving DBS may be warranted. Future directions include adding more subjects and comparing acoustic data to other modalities.

Examining Health Literacy at the Potter's House

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BACKGROUND: Populations with low health literacy have a higher incidence of negative health outcomes such as poorer disease management, decreased use of preventative services, and higher rates of hospitalization. Improving health literacy is important to improving health related outcomes in patient populations. Alcohol use disorder (AUD) and substance use disorder (SUD) are associated with low health literacy. The Potter's House is a residential recovery program for men with AUD and/or SUD. The purpose of this study is to identify the level of health literacy among men at The Potter's House and evaluate the current health educational materials provided to them.

METHODS: Men at The Potter's House were surveyed using the Rapid Estimate of Adult Literacy in Medicine - Short Form (REALM-SF) questionnaire, a 7-item word recognition assessment that estimates a patient's understanding of healthcare materials. Health educational materials provided to the men were analyzed through the CDC Clear Communication Index for health materials and the Flesch Reading Ease and Gunning Fog Index readability formats.

RESULTS: A total of 41 men were surveyed at The Potter's House during the summer of 2023. The average REALM-SF score was 5.762 which correlates to an average literacy level of 7th to 8th grade. 12 patient handouts were analyzed. The average CDC Clear Communication Index Score was 0.819. The average Flesch Reading Ease and Gunning Fog Index scores were 68.359 and 9.153 respectively. These scores correlated to an average grade level difficulty of 8th and 9th grade.

CONCLUSION: The health educational materials provided to the patients at The Potter's House are above their average grade level reading abilities.

Opioid Analgesia in Prehospital Services

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BACKGROUND: A critical aspect of care during SAR and EMS is pain management of a patient in a prehospital setting. In austere environments, intramuscular (IM) and intravenous (IV) administration of strong analgesics becomes impractical. This study aims to assess the efficacy and safety of use of sublingual Dsuvia (sufentanil, 30mcg) in prehospital settings, and hypothesizes that its use will benefit SAR and EMS teams without negatively impacting patient outcome.

METHODS: This was a retrospective case analysis. Patient records were selected from Teton County Search and Rescue, Grand Teton National Park EMS, Jackson Hole Fire/EMS, and St. John's Hospital from 2020-2023 based on the criteria that they were administered Dsuvia in a prehospital setting. Data was collected from these records in order to longitudinally assess patient characteristics, injury classification, medications administered, vital signs, and patient reported pain scale.

RESULTS: Between 202-2023, there were approximately 100 patients who received Dsuvia in a prehospital setting during an encounter with one of the aforementioned agencies. Based on assessment of the first 25 patient records, all patients who received Dsuvia were successfully handed off to a corresponding agency with no significant adverse reactions.

CONCLUSION: Initial results from this study indicate that Dsuvia is a safe and effective opioid analgesic in prehospital settings. Upon accessing patient records from secondary and tertiary agencies, further evaluation will help to either confirm or reject the hypothesis.

Presentation and Management of Ballistic Tendon Injuries of the Upper Limb

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BACKGROUND: Ballistic tendon injuries (BTI) are associated with a variety of complications, and a surge in gun violence in the USA makes their investigation crucial. This study offers insight into the presentation and management of BTIs to guide understanding of BTIs and how to best treat them.

METHODS: A retrospective chart review was conducted from January 2018 to January 2023. 57 patients had BTIs and were included in the study. Descriptive and statistical analyses were conducted.

RESULTS: Of the BTIs, 82% were male, 81% were black, and the median age was 29 years old. 46% were smokers. 98% suffered a concomitant bone injury, 23% a vascular injury, and 42% a nerve injury. Of the surgeries for bony injuries, concomitant nerve injuries were correlated with an increased risk of admission into the ICU ($p < 0.05$), while vascular injuries were correlated with increased risk of complications ($p = 0.00165$).

34 patients had an EDC tendon injury, 15 FDS, 14 FDP, and 10 EIP. At the index surgery, 43 patients underwent tendon repair, 6 tendon transfers, 7 tendon debridement, and 1 amputation. 25% needed a later tenolysis. Primary tendon transfer had less need for tenolysis (7%, $p < 0.005$). 7% of patients underwent an amputation, with amputations correlating with a shorter-than-median management time ($p < 0.05$). EIP injuries were correlated with a higher rate of staged tendon repair and amputation ($p < 0.05$).

There were 17 phalanx fractures, 10 radius, 8 ulna and 23 metacarpal fractures. Fractures were treated with K wires (35), plate (23), IM screws (5) and splint (2). Plate fixation was correlated with a longer-than-median follow up ($p < 0.05$). Patients with BTIs to their non-dominant hand attended a greater percentage of prescribed therapy appointments ($p = 0.0116$).

CONCLUSION: BTI's have a high rate of complications. Primary tendon transfer may need less subsequent surgeries, however, may extend follow-up. Patients with concomitant vascular injuries may be at greater risk for complications.

Age-Related High-Level Visual Processing in Healthy Individuals

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BACKGROUND: As humans, we can use our sight and cognition to rapidly recognize familiar objects and images, regardless of previous familiarity with the image. It is imperative to assess age-matched cohorts of subjects to gain an understanding of how high-level visual processing functions evolve with age. The aim of this study understand how aging affects our ability to process visual information, especially high-level visual processing involved in our ability to recognize faces and navigate places

METHODS: 23 subjects of age 18 to 30 and without ocular disease participated in the study, which consists of a series of tests designed to assess their vision and capacity to process visual information; computerized tests of place recognition, face recognition, and place navigation; and demographics. The data collected from this test group was analyzed and compared to data previously gathered in similar studies using older participants. Analysis of the data includes t-tests, Pearson Correlations, and Independent Samples analyses.

RESULTS: We found that participants under 40 correctly answered a higher percentage of scene navigation tasks (94.6%) than participants over 40 (89.7%) ($p=0.0259$). Additionally, participants under 40 required a smaller difference to distinguish faces (19.93) than participants over 40 (26.71) ($p=0.0374$). Participants with a MoCA score 28 or higher required a smaller difference to distinguish faces (27.56) than participants with a MoCA score 27 or lesser (20.57) ($p=0.0317$). Similarly, participants with a MoCA score 28 or higher required a smaller difference to distinguish scenes (42.51) than participants with a MoCA score 27 or lesser (32.53) ($p=0.0343$).

CONCLUSION: Our findings indicate a clear correlation between advanced age and decreased scene navigation & face recognition abilities. Our study also demonstrates a correlation between higher basic cognitive abilities and a greater ability to recognize faces and scenes.

A Retrospective Analysis of Pre/Post-COVID Characteristics of Ischemic Stroke Patients

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BACKGROUND: Time intervention is essential for treating stroke patients. During the COVID-19 pandemic, many hospitals reached maximum patient occupancy. People may have also been reluctant to seek hospital care until their concerns were severe in fear of contracting the virus. Such factors may have impacted the stroke severity of patients and their recoverability. The aim of this study is to investigate how patient characteristics and outcomes differed before and after the onset of the COVID-19 pandemic.

METHODS: A retrospective chart review of patients admitted to Piedmont Athens Regional (PAR) for ischemic stroke from December 15, 2018 – August 31, 2022, was performed. Charts were divided into pre-COVID (before March 11, 2020) or post-COVID (after March 12, 2020) groups. The patients' Last Known Well Time (LKWT) to arrival time, arrival to CT scan time, National Institutes of Health Stroke Scale (NIHSS) at admission and discharge, Modified Rankin Scale (MRS) score, length of admission, and patient disposition were analyzed using descriptive statistics and paired t-tests.

RESULTS: Out of 420 charts, 267 patients with confirmed ischemic stroke (pre-Covid = 95; post-Covid = 172) were included. Patients admitted post-Covid had significantly longer lengths of admission ($p = 0.003$) and had higher NIHSS scores at discharge ($p = 0.048$), indicating worse impairment. There were no significant differences in LKWT to arrival time or Arrival to CT time in pre- and post-COVID groups.

CONCLUSIONS: Overall, post-COVID patients were more severely impaired at discharge and experienced significantly longer hospital stays compared to pre-COVID patients. Future work is necessary to identify factors contributing to poorer outcomes and recoverability post-COVID.

Mini Med Camp: Developing a Specialized Curriculum to Combat the Physician Shortage and Promote Early Exposure to Medicine

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BACKGROUND: Georgia is facing a significant physician shortage. In Clarke County, there are only 534 physicians to serve a population of approximately 129,000. Not only is there a current lack of providers, but the physician workforce is also expected to have a shortage of up to 124,000 physicians by 2034. Additionally, there is a lack of diversity amongst the physician workforce. To improve patient outcomes and diminish healthcare disparities, we must diversify the healthcare field. It has been proven that by increasing the commonalities between patients and physicians, patient outcomes improve. We intentionally created a culture for young campers that sparked enthusiasm, empowerment, and forged relationships between campers, medical students, and physicians with the intent of showing that there is a place in medicine for everyone.

METHODS: We developed a curriculum that engaged campers in active learning about different body systems, the medical student experience, and careers in medicine through dynamic lectures, hands-on activities, and specialized electives. Lesson plans were modified weekly based on the estimated learning levels of campers and their feedback. In order to give campers the chance to explore a wide variety of topics of interest to them, they chose from several unique electives led by the counselors. On Fridays, campers were taught how to communicate with patients and exercised this skill in the simulation lab or with a standardized patient.

RESULTS: 184 campers aged 8-17 participated in Mini Med. 6 scholarships were given to campers from the local Athens community to provide support for students from low-income families.

CONCLUSION: The expanded Mini-Med curriculum allowed us to introduce children from many different backgrounds to the field of medicine, with the hope of increasing the likelihood that they will pursue a career in medicine.

Assessing Pro-inflammatory Biomarker HMGB-1 in Non-invasive Vagal Nerve Stimulation For Opioid Withdrawal in Patients with Opioid Use Disorders

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BACKGROUND: Opioid addiction is a critical epidemic in the United States. Managing opioid withdrawal is important for treatment adherence. Various non-invasive approaches are actively being investigated, including transcutaneous cervical Vagal Nerve Stimulation (VNS). When patients with Opioid Use Disorder (OUDs) undergo VNS therapy, they are found to have reduced opioid craving and physiological symptoms of withdrawal. Vagal nerve activity has been hypothesized to be implicated in the neuroinflammatory processes of opioid dependence, however these changes in non-invasive VNS therapy have not yet been discerned. Thus, our overall goal is to measure the effect of VNS therapy on multiple immune mediators.

METHODS: In this study, we conducted an initial examination of the proinflammatory cytokine, HMGB-1, in persons with OUD who underwent VNS. Fifteen persons with OUD in acute withdrawal were randomly assigned to receive double blind VNS or sham stimulation. Then, blood samples were collected from these participants at specific time points and serum was isolated and stored. Through a sandwich enzyme-linked immunosorbent assay (ELISA), we measured levels of the proinflammatory mediator, HMGB-1, in these serum samples.

RESULTS: This initial study showed that HMGB1 protein concentration varied substantially between patient samples.

CONCLUSION: For future experiments, more samples and timepoints will be run, and we will slightly adjust our assay parameters to bring all samples into the range of quantitation for the assay.

Phototherapy for Vitiligo: Quality and Readability of Online Health Information

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BACKGROUND: Vitiligo is a depigmenting disorder that affects up to 2% of the population. Due to the relatively high prevalence of this disease and its psychological impact on patients, decisions concerning treatment can be difficult. As patients increasingly seek health information online, the caliber of online health information becomes crucial in patients' decisions regarding their care. We aimed to assess the quality and readability of online health information regarding phototherapy in the management of vitiligo.

METHODS: Similar to previously published studies assessing OHI, we used 5 medical search terms as a proxy for online searches made by patients. Results for each search term were assessed using an enhanced DISCERN analysis, HONcode accreditation guidelines, and several readability indices.

RESULTS: Of the 500 websites evaluated, 174 were HONcode-accredited (35%). Mean DISCERN scores for all websites were 58.9% and 51.7% for website reliability and treatment sections, respectively. Additionally, 0/130 websites analyzed for readability scored at the NIH-recommended sixth-grade reading level.

CONCLUSION: These analyses shed light on the shortcomings of OHI regarding phototherapy treatment for vitiligo, which could exacerbate disparities for patients who are already at higher risk of worse health outcomes.

A New Approach to Structured Exercise Therapy in the Treatment of PAD

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BACKGROUND: Peripheral Artery Disease (PAD) is characterized by the narrowing of peripheral arteries due to plaque build-up. The current treatment focuses on improving patients' cardiovascular health and alleviating symptoms through exercise, where patients are encouraged to "walk to pain." However, these programs are challenged by low levels of adherence and patient satisfaction. If we can create a training tool for patients with PAD utilizing near-infrared spectroscopy (NIRS), we may be able to increase both patient walking distance and frequency, thus improving their functional status and overall health.

METHODS: Five healthy control subjects were tested to gather pilot data for a future exercise application. The participants were instructed to perform calf raises followed by walking on a treadmill at varying levels of intensity while a NIRS device placed on the subjects' medial gastrocnemius measured changes in muscle oxygen concentration. The data were reviewed in an analysis program where calibration and minimal oxygen concentration values were recorded for each participant.

RESULTS: For each participant, a coefficient of variation (CV) was calculated from their calibration (CVCal) and minimal oxygen concentration (CVMin) values. The results are as follows: Participant 1 (CVMin=19.3%, CVCal=32.2%), Participant 2 (CVMin=9.1%, CVCal=24.3%), Participant 3 (CVMin=14.5%, CVCal=17.5%), Participant 4 (CVMin=26.1%, CVCal=34.3%), and Participant 5 (CVMin=9.1%, CVCal=14.4%). Additional recruitment of patients with PAD is underway to determine how well the control cohort represents these individuals moving forward.

CONCLUSIONS: Based on our initial data, we have observed high variability in calibration and minimum values, suggesting that patients may require more frequent calibration checks with the NIRS device. This data will be utilized in the development of a program that establishes specific "training zones" for patients with PAD.

Utilization of Advanced Heart Failure Pharmacotherapy in Patients with Pacing Induced Cardiomyopathy

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BACKGROUND: Pacing Induced Cardiomyopathy (PICM) is a reversible cardiomyopathy due to high right ventricular pacing (>40%) within the first year of device implantation. Current treatment guidelines for cardiomyopathies involve a series of advanced heart failure medications (AHFMs) including SGLT2 inhibitors, mineralocorticoid receptor antagonists, and combined Sacubitril/ Valsartan. Patients with PICM can undergo Cardiac Resynchronization Therapy (CRT) with biventricular lead placement to normalize Left Ventricular Ejection Fraction (LVEF) without utilizing said advanced pharmacotherapy. There are no studies, however, that examine whether patients with reversible cardiomyopathies should be started or maintained on these expensive medications.

METHODS: This study used a retrospective chart review on patients at Piedmont Athens Regional who underwent a CRT upgrade between Jan 1, 2020, and Jan 1, 2022. CRT upgrade patients were identified and then selected according to whether their LVEF recovered to 50% or above >3 months after upgrade. Patients meeting these criteria were then subdivided into those who enrolled in advanced heart failure clinics (HFCs) and those who did not.

RESULTS: Of the 34 patients with a reduced LVEF prior to CRT upgrade, 9 patients (26.5%) had a recovered LVEF ($\geq 50\%$). In these patients, no significant difference was seen amongst those who were placed on AHFM (2/9 patients) versus those who were not (7/9 patients) ($p=.88$). Of the 2 placed on AHFM, both were maintained on at least 1 AHFM for longer than one year post LVEF recovery while only 1 of these patients was enrolled in the HFC.

CONCLUSIONS: The benefit of AHFMs in the treatment of PICM has not been defined. In this retrospective study, there was no difference in patients who were on AHFMs 1 year after having their LVEF restored with a CRT upgrade and those who were not on AHFMs 1 year after upgrade. Future studies are needed to define the role of AHFMs in the treatment of PICM.

An update on mobile phone apps collecting data among subjects with or at risk of dementia

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BACKGROUND: The ubiquity of smart mobile phones is increasing worldwide, creating an opportunity for telemedicinal use by screening people at risk of or with dementia through monitoring daily routines, behaviors, and cognitive changes. Data logged or tracked in an app and analyzed with machine learning (ML) could be shared with physicians and specialists to allow for screening, follow-up, and timely diagnoses, and could provide users information on preventive measures or disease management. This review comments on existing evidence of mobile device applications designed to passively and/or actively collect data on cognition relevant for Alzheimer's disease (AD) and other dementias.

METHODS: The PubMed database was searched to identify existing literature on applications related to dementia and cognitive health data collection. Criteria for inclusion was limited to articles in English which referenced data collection via mobile app from adults 50+ concerned, at risk of, or diagnosed with dementia.

RESULTS: We identified relevant literature ($n = 25$) which fit our criteria. A common theme among excluded literature was the mention of apps that provide users, primarily caregivers, with cognitive health information but fail to collect data. We found the existing library of data collecting dementia-related apps has existed for several years yet remains underdeveloped; however, it may serve as proof of concept and feasibility as there is much supporting evidence on their predictive utility.

CONCLUSION: Concerns about the validity of mobile apps for cognitive screening and privacy issues remain prevalent. Mobile applications and use of ML is widely considered a financially and socially viable method of compiling symptomatic data but currently this large potential dataset, telemedicine communication tool, and research resource is still largely untapped.

Aging in Central Europe: Reporting indices of care in geriatric clinics in the Czech Republic

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BACKGROUND: Despite a population of 10.5 million people, the Czech Republic has few geriatricians and geriatric outpatient clinics. Public insurance has not historically covered geriatric clinic visits. The Czech Gerontological and Geriatric Society and the Alzheimer's Foundation Czech Republic developed a pilot project to understand geriatric care in four domains. The aim of this ongoing project is to support the functioning and availability of geriatric outpatient clinics, and to optimize care for elderly patients who have cognitive impairment and other comorbidities.

METHODS: The pilot survey was developed and sent out to 32 geriatric clinics with 23 geriatricians around the Czech Republic. Data was collected and translated. Four components were measured: case management, frailty, pharmacological management, and nutrition. Here we discuss the case management portion of the project.

RESULTS: Most patients (>75%) seen at the clinics have cognitive impairment, 6-11 comorbid conditions, take 5-10 medications, and have an informal family caregiver. Most case management takes 20-30 minutes. 72-87% of geriatricians reported observed or expected improvements in compliance, patient health status, and fewer hospitalizations due to the influence of case management. 94% of geriatricians expect lower healthcare spending with case management.

CONCLUSION: Initial survey results in outpatient geriatric clinics indicate overwhelming support for the continued use and future implementation of case management. These results were shared with the Czech Ministry of Health which has led to improved cost coverage for geriatric outpatient visits. The project has also encouraged collaboration of the professional Czech geriatric community. Future goals include more extensive questionnaires to further evaluate geriatric clinic efficacy and needs, improve financial support of geriatric care, and promote greater integration of outpatient geriatric care into the Czech healthcare system.

Is geriatrics dying as a medical specialty? Developing a comparison of geriatrician perspectives between Europe and the United States

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BACKGROUND: There is a growing aging population in Europe and the United States but the current number of practicing geriatricians to care for this patient population is inadequate. Focusing on two comparable states, the Czech Republic and Georgia, we seek to understand the current situation of geriatric care from the perspectives of Czech and American geriatricians via survey. We expect to find useful data on the economic impact of geriatric clinics, positive and negative geriatric procedures, the impact of geriatric care on the well-being of senior patients, and geriatric medical education.

METHODS: We identified primary aims and a menu of possible approaches to developing and implementing a cross cultural survey. This included identifying comparable points of interest and potential collaborating institutions in both states. Czech geriatricians were verbally surveyed at a national gerontological conference to assess initial perspectives.

RESULTS: Four main objective categories were identified for this project. A questionnaire was developed and translated into both the Czech and English languages. The initial qualitative perspectives from Czech geriatricians were recorded and translated in a video format.

CONCLUSION: Overwhelmingly the qualitative results and initial aims we developed indicate the necessity of implementing this survey to promote geriatric medical education. It remains unclear how geriatric practice compares between the two states; the next step for this project is to distribute the survey and assess the responses to address our four objectives. We hope to develop initial economic recommendations regarding elderly care in both states, but particularly for the Czech inclusion of geriatric medical care in the national insurance coverage.

The Association of Lesion Location on Stroke Recovery Prognosis: A Retrospective Analysis

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BACKGROUND: When a patient is discharged following acute hospital treatment for a stroke, they can retain residual deficits. Lesion location has been shown to be a prognostic factor of the patient's deficit severity. Left unilateral strokes, especially in the thalamus, correspond to a worse prognosis. This study seeks to investigate how the location of the lesion affects disability recovery outcomes and rehabilitation needs.

METHODS: This study reviewed the charts of patients admitted to Piedmont Athens Regional (PAR) with a diagnosis of ischemic stroke between January 2019 and December 2022. To determine the relationship between lesion location and subsequent disability severity, lesion hemisphere (left, right, bilateral), gross lesion location (cortical, non-cortical), NIH Stroke Scale (NIHSS) and Modified Rankin Scale (mRS) at time of discharge, Activity Measure for Post-Acute Care (AM-PAC), and intensity of care required post-discharge were assessed using one-way ANOVAs and t-tests.

RESULTS: A total of 268 patients diagnosed with ischemic strokes were included. Bilateral stroke patients were admitted for significantly longer ($p = 0.02$) and discharged to a facility providing a higher intensity of care ($p = 0.01$) than unilateral stroke patients. There were trends such that bilateral stroke patients had worse AM-PAC scores ($p = 0.05$) and left unilateral stroke patients had worse NIHSS scores than right unilateral stroke patients ($p = 0.08$). Patients with lesions including the cortex had significantly worse mRS than patients without cortical lesions ($p = 0.01$). There was a trend such that cortical involvement patients had worse AM-PAC scores ($p = 0.05$).

CONCLUSION: Patients with bilateral lesions and lesions involving the cortex were more likely to have worse outcomes post-stroke. These results suggest that lesion location may be a useful parameter to predict the extent of rehabilitation needs at time of discharge.

Real-world experience of anti-angiogenic targeted therapies in metastatic renal cell carcinoma in older patients

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BACKGROUND: Targeted therapies such as anti-angiogenic endothelial growth factor (VEGF) inhibitors, including axitinib, lenvatinib, and cabozantinib, are standard-of-care in the management of metastatic clear cell renal cell carcinoma (RCC). Because of the high bar for clinical trial participation, older and more frail patients are underrepresented in trials leading to FDA-approved therapies and the study populations are not always representative of the real-world population. We are sought to examine the real world outcomes in older patients treated with TKIs including clinical outcomes and their correlation with toxicities experienced and baseline frailty.

METHODS: A cohort of patients \geq age 70 with advanced RCC treated with a TKI (axitinib, cabozantinib, lenvatinib) in the 1st line of therapy were identified using an electronic pharmacy database. We retrospectively collected demographics, disease characteristics, initial drug doses, interruptions/reductions, and drug-related adverse events. Baseline geriatric vulnerability was measured via the G8 Geriatric Screening Tool which provides an estimation of a patient's frailty. Primary endpoints were progression-free survival, overall survival, objective response rate, and clinical benefit rate. Data will be analyzed using univariate analysis and multivariable analysis using Cox proportional hazard model the association between patient outcomes with G8 scores and rates of toxicity. Survival will be calculated via Kaplan-Meier analyses.

RESULTS: Data is currently under statistical analysis; therefore, significance and correlation have not yet been established. However, according to preliminary data, we expect that patients with a lower G8 score (indicating geriatric vulnerability and frailty) have worse clinical outcomes and lower tolerance of these therapeutic agents.

CONCLUSION: These data will contribute to the growing bank of real-world data regarding outcomes of older patients with advanced RCC. Since this patient population is poorly represented in clinical trials, it is essential to understand how their treatment outcomes and toxicities may differ from younger and fitter patients whose outcomes are reported in trial data. These data will serve as the foundation for future work optimizing the treatment of older adults with RCC.

Efficacy of LAA Ligation in Preventing Stroke in Patients with Atrial Fibrillation Undergoing CABG - Real World Experience in Two Community Hospitals

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BACKGROUND: Patients with atrial fibrillation (AF) are at a 5-fold increased risk of having thromboembolisms (TE). A variety of pharmacologic and surgical techniques have been developed to reduce this risk. The LAAOS III Study demonstrated that in patients with AF undergoing coronary artery bypass grafting (CABG), left atrial appendage (LAA) ligation reduced the risk of stroke. Most of these patients undergoing ligation, however, remained on long-term oral anticoagulation (OAC). Neither technical success, nor the necessity of continued OAC following LAA ligation, has been assessed either in a clinical trial or real-world situations.

METHODS: The study was structured as a retrospective quality improvement study to assess the technical success, the utilization of OAC, and the rate of TE following LAA ligation in patients undergoing CABG. Patients undergoing CABG at Piedmont Atlanta or Piedmont Athens Regional between Jan. 1, 2020 - Jan. 1, 2022 were identified using the prospective STS database and were included if they had AF, LAA ligation, and CABG. Patients were followed until June 1, 2023 and evaluated for imaging post ligation, use of OAC, and post-operative stroke.

RESULTS: Fifty patients met the inclusion criteria for the study. Forty-four patients underwent imaging of their LAA following ligation with either transesophageal echocardiogram or chest computed tomography. For the study population, 56% (n=28) were on OAC therapy at the end of the study period while 44% (n=22) were not. Of patients who had dedicated LAA imaging (n=44), 55% remained on OAC (n=24). Two patients on OAC had a post-operative stroke compared to one who was not (OR of 1.615 (CI: 0.1768-24.40)).

CONCLUSION: In this small retrospective study, a sizable portion of patients were taken off OAC after LAA ligation. This did not appear to confer an increased risk of stroke. Future studies on how dedicated imaging can be used to guide OAC decisions post LAA ligation studies are needed.

Does the presence of comorbid depression affect ischemic stroke outcomes?

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BACKGROUND: Post-stroke depression (PSD) may increase cognitive impairments and worsen recovery, leading to more difficulties in activities of daily living. The relationship between PSD and worsened functional outcomes is well established, but the impact of comorbid depression at the time of stroke on recovery is less clear. The purpose of this study was to evaluate the relationship between comorbid depression and stroke outcomes.

METHODS: A retrospective chart review of patients admitted to Piedmont Athens Regional for ischemic stroke (N = 268) was conducted. To evaluate the relationship between comorbid depression and outcomes after stroke, patients were stratified based on whether they had a diagnosis of depression at the time of stroke or not. Severity of impairment (NIHSS score) and disability (modified Rankin Score, mRS) on admission, and rehabilitation needs post-discharge were used as outcome measures. Additionally, sex differences were evaluated for depression, antidepressant use, and rehabilitation needs. T-tests and chi-square tests were used for statistical analyses.

RESULTS: Of the ischemic stroke patients included, 17% had a diagnosis of depression on admission. There were no significant differences in the outcome measures between patients with and without depression; however, there was a trend such that patients with depression had higher admission mRS scores than patients without depression, indicating a higher level of disability ($p < 0.07$). Female stroke patients were more likely to have depression ($X^2=9.16, p=0.002$) than males. Females were also more likely to be discharged to subacute rehabilitation facilities, while males were more likely to be discharged home with no needs ($X^2=14.81, p=0.038$).

CONCLUSION: Further work is needed to ascertain the relationship between depression and stroke severity/degree of disability. Females have a higher risk of depression, antidepressant use, and more intensive rehabilitation needs post-discharge than males.

Dementia Diagnosis and Care in Rural Georgia: Challenges and Impacts on Primary Care Providers

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BACKGROUND: Mild cognitive impairment (MCI) and dementia are commonly encountered by primary care providers (PCPs). Alzheimer's disease is the most common form of dementia, but not the only cause. Large studies have shown that both MCI and dementia are underdiagnosed and undertreated in the United States. Understanding the factors that influence the diagnosis and treatment by PCPs may help identify gaps in resources, resource utilization, and programs to help Georgia providers maximally serve their patients.

METHODS: This study consisted of (1) a 17-question survey and (2) a 30-minute interview. Participants received a Qualtrics survey via email (~38 recipients, primarily office managers who forwarded it to providers) or e-newsletter. Providers responded to questions about their confidence in diagnosing and treating MCI/dementia using a 5-point Likert-type scale. Interested survey respondents were invited to complete a 30-minute interview to elaborate on their survey responses.

RESULTS: 11 responses to the survey were obtained during the month of June-July of 2023 (family medicine=3, neurology=1, and internal medicine=7). Most respondents indicated that 20% or fewer of their patients were diagnosed with MCI or dementia. One respondent reported being "extremely confident" in diagnosing Alzheimer's disease; the remainder identified themselves as being somewhat confident or neutral. Only one respondent identified themselves as "extremely confident" in "managing the behavioral changes that often accompany dementia." This sentiment parallels the information gleaned from the 2 interviews, which showed major themes regarding challenges with chronic disease management on top of MCI.

CONCLUSIONS: Preliminary qualitative data review of this ongoing project identifies few providers who feel extremely confident in diagnosing Alzheimer's disease and managing the medical and behavioral complexity of the disease as it progresses.

Do Cubital Tunnel Syndrome patients who are US+ /EDX- have better prognostic outcomes than patients who are US+ /EDX+?

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BACKGROUND: Cubital Tunnel Syndrome (CuTS) is the second most common compressive neuropathy in the upper extremity. However, standardized CuTS diagnostic and treatment guidelines have yet to be clearly defined and prognostic data is variable at best. Although both Ultrasound (US) and Electrodiagnostic studies (EDX) are commonly used, a paucity of data exists concerning the use of EDX and US diagnosis and patient prognosis.

METHODS: A retrospective chart review was conducted of our institution's electronic medical record from September 2016 to May 2023. All patients diagnosed with CuTS as confirmed by CuTS surgery were identified. Patients' surgical information, US diagnosis, EDX diagnosis, and pre-operative and post-operative measurements at 6-week and 3-month follow-up were gathered. Specifically, VAS Pain Scores and QDASH, SSV, EQoL, Semmes-Weinstein Monofilament, 2-Point Discrimination, grip strength, and appositional pinch strength values were recorded and compared between the two populations. A post hoc analysis of the patients' 6-week and 3-month change in VAS Pain Scores and QDASH data was then performed using $\alpha=0.05$ and $\beta=0.2$.

RESULTS: A total of 52 US+ /EDX+ patients and 34 US+ /EDX- patients were included in this study. Univariate analysis was employed to compare the cohorts' postoperative outcomes at 6-week and 3-month follow-up. No difference was found among the patients' outcomes at 6-week and 3-months postoperatively ($p > 0.05$). The post hoc analysis demonstrated larger patient populations are required to determine if there is no true difference between the two groups' post-operative change in VAS Pain and QDASH scores.

CONCLUSION: This data contributed to prognostic knowledge of the CuTS patients. Further studies incorporating larger patient populations are required to determine if there is no true difference between the post-operative outcomes of US+ /EMG+ and US+ /EMG- patients.

Preliminary Implementation of a Community Based Diabetes Management Clinic in Clarkston, Georgia

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BACKGROUND: Effective diabetes management necessitates regular blood glucose monitoring, medication adherence, and lifestyle changes. Clarkston, Georgia is home to 23,000 resettled refugees, many of whom suffer disproportionately from the burden of diabetes. Additionally, this population faces linguistic, cultural, and economic barriers that impede healthcare access. This study presents the preliminary results of implementing a free diabetes community clinic that caters to the needs of uninsured and underinsured refugee patients with diabetes in Clarkston.

METHODS: The clinic visits comprised of phased interventions beginning with comprehensive physicals and subsequent individualized workshops with licensed dietitians focusing on nutrition and physical activity. Patients then participated in training sessions covering the utilization of diabetes tools such as glucometers and blood glucose diaries. Additionally, educational sessions on administration and adherence to diabetes medications were conducted for patients who had the need. To address patients' linguistic needs, interpreters were present for doctor appointments, nutrition workshops, and educational sessions. Furthermore, the clinic offered educational pamphlets, videos, and discharge instructions in multiple languages, ensuring accessibility, and understanding among the patient population.

RESULTS: 13 patients have attended the clinic so far, with 11 returning for subsequent visits. Of the 13 patients, 12 have participated in all of phases of their visits, including the comprehensive physicals, dietary workshops, and education sessions. 4 patients were provided Spanish interpreters and 9 were provided Burmese interpreters. All patients received discharge and educational instructions in their native language.

CONCLUSIONS: Preliminary data suggests that the clinic has the capacity to continue offering tailored diabetes services and education to the diverse patients in Clarkston. The next steps for the clinic include increasing clinic dates and languages offered to support additional patients.

Patient Pain, PTSD, and Functional Outcomes Following Nonsurgical Management of Ballistic Fracture of the Pelvis

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BACKGROUND: There are many medical and psychological complications found in patients with ballistic fracture, including chronic pain, PTSD symptoms, and lasting physical difficulties. There is a paucity of research on the outcomes of patients who undergo nonsurgical management of a ballistic fracture. Fractures around the pelvis can lead to additional complications because of the proximity of other organs and major nerves and vessels. The overall goal of this study is to describe the patient reported outcomes of patients who had nonsurgical management of a ballistic fracture to the pelvic ring or acetabulum.

METHODS: After IRB approval, a retrospective chart review identified 101 patients who sustained a ballistic pelvic ring or acetabulum fracture managed without surgery. Our study was a retrospective cohort study, and all patients were contacted by phone. 19 patients agreed to participate and received a follow-up assessment of daily pain, PTSD symptoms related to the injury or recovery process, perceived disability due to pain, and functional outcome following their injury using previously validated surveys.

RESULTS: The mean daily pain score was 5.53/10 (± 3.94). The mean score for pain catastrophizing was 29.39/52 (± 18.02). 77.78% of patients meet the conservative cut point score for provisional PTSD diagnosis. The mean score for disability due to pain was 37.47/70 (± 20.84). 44.44% of patients have poor functional outcomes following pelvic fracture.

CONCLUSIONS: Our cohort showed substantial daily pain that impacts daily thoughts and feelings. Most of the patients surveyed may have PTSD and may benefit from earlier identification and treatment measures. Patients report functional disability in multiple areas of daily life. These findings suggest that patients with less invasive management of pelvic fractures who may be lost to regular follow up are experiencing negative consequences from their injury and may benefit from a more rigorous follow up protocol.

Analysis of Conduction Disturbances during TAVR Procedures

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BACKGROUND: Transcatheter Aortic Valve Replacement (TAVR) is an established and less invasive alternative to surgical valve replacement for patients with aortic stenosis. Conduction disturbances (CD) post-TAVR remain a common complication of this treatment, commonly attributed to damage to the conduction system caused by the transcatheter heart valve (THV) itself. However, CD complications may occur earlier in the procedure. We sought to examine the incidence of CD occurring prior to valve deployment and identify the various causes.

METHODS: In a retrospective analysis, a case series with chart review was performed at Weill Cornell Medical Center New York Presbyterian between January and July 2023. We identified patients in whom CDs were evident prior to valve deployment in the TAVR procedure. ECGs pre- and post-TAVR were recorded, and CDs were defined as a change in QRS or PR interval of ≥ 20 msec or high degree AV block (2nd degree Mobitz II or 3rd degree AV block). Rhythm was continuously monitored during the TAVR procedure and procedure stage (stiff wire introduction, balloon pre-dilation, valve deployment) was noted when the CD was first observed.

RESULTS: Overall, 87 charts were reviewed of patients who underwent TAVR procedure. Of those, 50 patients were found to have new CD on post-procedure ECG. 11 were noted to have significant changes to their conduction system seen prior to valve deployment (stiff guidewire introduction, THV crossing valve, etc.). At the conclusion of the TAVR procedure, TVP was placed in 8/11 (72.7%) patients. At discharge, CD resolved in 4/8 patients (50%), 1/8 remained with 1st degree AV block, and 3/11 (27.3%) patients received a permanent pacemaker.

CONCLUSIONS: CD seen prior to valve deployment in TAVR may be significant and non-transient, and could affect patient's clinical outcomes. Further prospective studies with larger populations are necessary to clarify the exact incidence of these pre THV deployment CD, and their clinical significance.

Video-Assisted Frailty Measurement in the Emergency Department

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BACKGROUND: Frailty is a physiological state where small deviations in a patient's health can lead to a wide variety of adverse events including frequent hospitalization, increased mortality, and lower quality of life. Screening for frailty is recommended in the Emergency Department (ED) but is rarely performed due to time constraints and necessary specific training. Video-Assisted Frailty Measurement (VAFM) is a novel frailty screening tool that uses a repeated flexion/extension exercise to assess frailty. In this project, we piloted the use of VAFM in the ED.

METHODS: Our study included ED patients ≥ 65 years of age at a tertiary care medical center in Boston, MA. A cognitive assessment (MoCA) was administered to all patients enrolled in the study. Through interview, a clinical frailty score was then assigned at both 2 weeks and 72 hours prior to patient's visit to the emergency department. Patients were then asked to perform the flex-extend task as well as a "Dual-Task" where they were asked to count backwards from 30 by 1s. Patients were then surveyed on their opinions of VAFM based on the Likert Scale.

RESULTS: The average age of participants was 75.4 years of age and were predominantly female (65%). 31% were non-white with 6.3% identifying as Hispanic. 48/50 enrolled patients completed study procedures (96%). At time of VAFM, almost half were being admitted (48%), a third in observation (37%), and the rest discharged (15%). Mean frailty score 2 weeks prior to arrival was between Managing Well and Living with Very Mild Frailty. Mean frailty score 72 hours prior to arrival was between Living with Very Mild Frailty and Living with Mild Frailty. VAFM took on average 2:30 minutes to complete and overall patients found the VAFM process agreeable on a 5 point Likert scale: 4.4 ± 0.9 .

CONCLUSIONS: VAFM reached its target feasibility runtime in under 5 minutes and patients found the process agreeable, with the highest score in meeting patient approval. In ongoing research, we will investigate associations between VAFM measurements and clinical frailty across this cohort.

Is Patient Geography Associated with Clinical Outcomes Among STEMI Patients at a Tertiary Care Center?

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BACKGROUND: ST-elevated myocardial infarction (STEMI) is a life-threatening event that requires urgent medical management for an optimal prognosis. Geographic distance from the hospital may influence transport times and/or propensity to seek care (especially during COVID-19), thus affecting patients' clinical outcomes. This study seeks to determine whether patient geography was associated with STEMI outcomes in 2019 (pre-COVID year) and 2021 (COVID year).

METHODS: A retrospective chart review of 207 participants at Piedmont Athens Regional (PAR) was performed. Eligible participants were gathered from the PAR STEMI database and included patients aged 18 to 80 who presented with STEMI at PAR in 2019 (n=121) and 2021 (n=86). Demographics (including distance from patient's primary address to hospital), medical history, clinical parameters, clinical outcomes and complications were assessed. We compared outcomes for patients living <20 miles away with patients living ≥20 miles away in years 2019 and 2021.

RESULTS: In 2019, 50.4% of participants (n=61) lived <20 miles from the hospital, and 49.6% (n=60) lived ≥20 miles away. Living <20 miles away in 2019 was associated with higher odds of cardiogenic shock (OD=1.43), cardiac arrest (OD=3.72), and death (OD=5.27). In 2021, 53.5% of participants (n=46) lived <20 miles from the hospital, and 46.5% (n=40) lived ≥20 miles away. Living <20 miles away in 2021 was associated with higher odds of cardiogenic shock (OD=4.00) and cardiac arrest (OD=2.47). All participants who died in 2021 (n=5) lived <20 miles away. In both years, distance to the hospital was not associated with door-to-procedure start time or peak troponin levels.

CONCLUSIONS: Living farther from the hospital was not associated with mortality or severe complications in 2019 and 2021. A selection bias may exist in that STEMI patients living farther away may experience cardiac arrest/death before hospital admission, and thus are not included in the STEMI database.

A Comparative Analysis of STD Rates in Georgia Department of Public Health District 2 During Surges in COVID-19

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BACKGROUND: Chlamydia and gonorrhea are sexually transmitted infections (STIs) that can be transmitted through oral, anal, or vaginal sex and perinatally from mother to baby during childbirth. There has been an overall increase in chlamydia and gonorrhea cases over the last decade in Georgia Department of Public Health (GDPH) District 2. By performing a comparative analysis of STI and COVID-19 rates, a better understanding of the relationship between these two epidemics and their impact on demographic segments including age, sex, and race could be provided.

METHODS: Incidences of chlamydia and gonorrhea confirmed with positive laboratory results were reported from providers within the 13 counties of GDPH District 2. Data was collected from the GDPH State Electronic Notifiable Disease Surveillance System (SendSS) and Online Analytical Statistical Information System (OASIS).

RESULTS: Data collected supported that there was an overall increase in chlamydia and gonorrhea between 2018-2022. Individuals aged 20-24 remained the most affected population, which aligns with statewide and national trends. Similar to trends before the pandemic, chlamydia disproportionately affected females. Gonorrhea cases were mostly contracted by men, as seen statewide and nationally. However, cases shifted to become more equal between males and females following the pandemic. Race distribution showed that African American individuals in GDPH District 2 were disproportionately affected by chlamydia and gonorrhea in comparison to their White and Hispanic counterparts. This is also consistent with state and national trends.

CONCLUSIONS: As confirmed COVID-19 cases increased, an increase in confirmed chlamydia and gonorrhea cases was also observed. Further studies are required to understand the relationship between STIs and COVID-19. Furthermore, access to services is key in maintaining low rates of STIs through timely testing, diagnosis, and treatment.

Silent Dangers: Inappropriate Prescription of Teratogenic Medications in Reproductive-Aged Women

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BACKGROUND: Teratogenic medications, prescribed for different medical conditions can have ruinous effects on fetal development during pregnancy. Despite this well-known fact, only a small fraction of women are counseled on this, and only a few are on appropriate contraceptives.

OBJECTIVES: To quantify the number of reproductive-aged women (ages 18-49) prescribed potentially teratogenic medication without adequate family planning discussions and an appropriate reproductive history.

METHODS: This was a retrospective study of female patients 18-49 years of age seen at the Piedmont Athens Regional Clay Community Care Clinic (PAR CCCC) between July 1 and December 31, 2022. Demographics, medical comorbidities, adequate reproductive history (last menstrual period and current use of contraceptives), and use of teratogenic medications were extracted from the electronic health record. Descriptive statistics were conducted.

RESULTS: About 162 patients were identified, with only 158 remaining after applying the inclusion criteria. The median age was 38, most of them were White (58.2%), and 122 (77.2%) were insured. Among them, 82/158 (51.9%) were taking teratogenic medications. Of these women 18/82 (22%) were asked about their last menstrual period and 45/82 (54.9%) had a documented contraceptive use.

CONCLUSIONS: As age increases, the number of women prescribed teratogenic medication increases. Many reproductive-aged women seen at PAR CCCC who are prescribed teratogenic medication have no reproductive history documented. Further studies should be conducted to identify reasons why resident physicians do not document an appropriate reproductive history, and interventions to address these challenges should be put in place.

Bundling Up for Better Blood Pressure: Impact of Bundle Interventions on Patients with Hypertension

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BACKGROUND: Hypertension is a major risk factor for cardiovascular diseases. In the United States, there are over 3 million cases of newly diagnosed hypertension per year, with only a fourth of patients having controlled hypertension. This study assesses how patients' health literacy and adherence to antihypertensive interventions affects the extent to which their blood pressure (BP) is controlled.

METHODS: This was a prospective cohort study analyzing data from adults 18 years and above with a blood pressure of 140/90 mmHg and higher that were seen between June 1, 2022 and June 30, 2023 at the Piedmont Athens Regional Community Care Clinic (PAR CCC). They received a home blood pressure device as well as, exercise and dietary plans, along with being offered free transportation to their clinic appointments. Variables on demographics and comorbidities were collected at the beginning of the study, and blood pressure readings, medication adherence (Hill Bone score), and awareness of hypertension were collected at each clinic visit. Descriptive statistics were conducted.

RESULTS: The study had a retention rate of 71.4% at 3 months, with 6 out of 21 patients leaving the study for unknown reasons. The average BMI was 34.9 kg/m². There was an average systolic BP decrease of 20.5 mmHg and an average diastolic BP decrease of 9.5 mmHg. Higher Hill Bone scores were associated with lower systolic and diastolic BP. Most of the patients had comorbidities associated with poorly controlled hypertension.

CONCLUSIONS: Adherence to multi-modal antihypertensive bundle interventions leads to better blood pressure control.

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