Acknowledgements
We wish to thank Ms. Joyce Fortune, Office for Research, without whom this Research Symposium would not have been possible.
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Presentation #1
Postgraduate training of emergency physicians working in academic Emergency Departments in the United States

Kunal N. Agarwal

**Study Objective:** We aimed to assess the postgraduate medical training of academic emergency medicine (EM) physicians in the United States and to compare the training backgrounds of faculty working at emergency departments (EDs) with three and four year EM residency programs. Prior studies of the training of academic EM physicians have focused on particular types of physicians and relied on self-report.

**Methods:** We assessed the residency and fellowship training of emergency physicians working at all active ACGME approved EM residency programs. We reviewed information reported on programs’ websites and supplemented this with review of Doximity, LinkedIn, and direct communication with residency program coordinators. We calculated descriptive statistics and performed univariate analyses.

**Results:** Of the 7,590 EM academic physicians identified, residency and fellowship training data were obtained for 7,197 (95%). More than one third (2,604, 36%) of academic EM physicians completed training beyond their emergency medicine residency, with 2,299 (88%) completing a fellowship and 305 (12%) completing an additional residency. The most common fellowships completed were ultrasound (19%), EMS (13%), toxicology (13%), and critical care (10%). 2,649 academic faculty (37%) completed only a three year residency emergency residency, and most of these physicians had >10 years of post-training experience (72%; 95%CI: 70-74%). Nearly half of physicians at four year residency programs only completed a four year residency programs (44%) and one fifth completed four years of residency training followed by a fellowship (21%). Over one third (36%; 95% CI: 34-37%) of academic physicians trained at the same program where they currently worked, 56% (95% CI: 54-57%) trained in the same state, and 65% (95% CI: 64-66%) trained in the same region. Nearly a fifth of academic faculty physicians also completed another graduate degree (18%; 95% CI: 16-20%). The most common graduate degrees were MPH (34%), MS (29%), MBA (15%), and PhD (9%).

**Conclusions:** In this comprehensive study of academic EDs, one third of emergency physicians completed post-residency training, most commonly an ultrasound fellowship. At academic EDs with four year residency programs, most physicians had completed training at a four year program with or without a fellowship. Less than one third of academic physicians completed three years of residency training without a fellowship, and they most frequently worked at three year programs and had >10 years of post-training experience.

Presentation #2
MR perfusion imaging for the surveillance of arteriovenous malformations treated with stereotactic radiosurgery

JungEun Ahn

**Introduction:** Intracranial arteriovenous malformations (AVM) are high-flow vascular lesions that carry a yearly risk of rupture. For select AVMs, Stereotactic Radiosurgery (SRS) has been shown to frequently achieve complete obliteration over a latency period of 1-3 years. During this time, surveillance is done via brain MRI. However, complete obliteration must be confirmed via digital subtraction angiography (DSA). There remains a need for non-invasive methods to confirm AVM obliteration. Presented here is a single center experience using MR perfusion for the monitoring of brain AVMs following SRS treatment.
Methods: This retrospective study reviewed a database of patients with brain AVMs treated at UVA with SRS from 2004 to 2020. Patients who had undergone MR perfusion imaging before and after SRS were included. Of these, 18 patients were excluded due to artifacts based on prior hemorrhage or embolization. A total of 11 patients were included as part of the study.

Results: The median age of treated patients was 21 years (range 10-66). Complete obliteration was confirmed via DSA in two patients. Pre-SRS MRI perfusion imaging (baseline) showed relative cerebral blood volume (rCBV) and relative cerebral blood flow (rCBF) to be significantly elevated in the AVM nidus (p <0.001). Post-treatment images showed significant decreases in AVM nidus rCBV (p = 0.043) and rCBF (p = 0.036) during the course of follow-up. There were no significant changes in rCBV or rCBF found in the surrounding brain regions (p ≥ 0.05).

Conclusion: MR perfusion imaging was shown to be a non-invasive method to monitor hemodynamic changes within the AVM following SRS treatment. The greatest changes were seen in rCBV and rCBF.

Presentation #3
Gamma Knife Stereotactic Radiosurgery for the treatment of olfactory groove meningiomas: a single center series

JungEun Ahn and Sarah Fribance

Introduction: Olfactory groove meningiomas (OGM) make up approximately 10% of all intracranial meningiomas. Open surgical resection has long been the standard of care for OGMs once they become symptomatic. However, careful patient selection is needed based on the size and location of the meningioma. Gamma Knife Stereotactic Radiosurgery (SRS) is a minimally invasive treatment that has shown low complication rates and good efficacy for such lesions. Presented here is a single center experience with the usage SRS for the management of OGMs.

Methods: This study was a retrospective review of 20 patients with olfactory groove meningiomas treated with SRS at UVA from 2007 to 2019. Clinical outcomes and treatment parameters were recorded. The treatment response was assessed based on tumor volume during and after SRS by RANO criteria endpoints.

Results: The median age of patients treated with SRS was 58.5 years with a mean duration of follow-up of 61 months. Per RANO criteria, 75.6% of patients were found to have stable disease following SRS treatment. Additionally, 25% of patients showed marginal response, 10% showed progressive response, and 5% showed a complete response. No patients showed progressive disease. All adverse radiation events, experienced by 45% of treated patients, were transient. Of these, 4 patients were symptomatic for a mean duration of 2.9 months.

Conclusion: From our institutional data, SRS was found to be a safe and efficacious method of disease control for olfactory groove meningiomas. On follow-up, the vast majority of patients were found to have stable disease with relatively short-lived adverse radiation events.

Presentation #4
Stress Incontinence Outcomes Following Robotic Prostatectomy: Interim Analysis of Novel Pelvic Floor Program

David L. Barquin

Introduction: Post-prostatectomy incontinence is common and associated with a high degree of patient distress. The AUA Guideline for incontinence after prostate treatment recommends
that clinicians offer pelvic floor muscle training (PFMT) in the immediate post-operative period. The UVA prostatectomy functional outcomes program (PFOP) was developed in 2018 to comprehensively assess and optimize continence outcomes following radical prostatectomy. As part of this program, enrolled patients complete specialized in-house pelvic floor muscle training (PFMT) directed by a fellowship-trained FPMRS specialist (DR). PFMT sessions are conducted at baseline, 3-months, 6-months, and 12-months following surgery and are supplemented by a home exercise program.

**Methods:** We performed an interim analysis of 13 PFOP patients achieving 6-month follow-up after robotic prostatectomy by three oncologic surgeons. As part of ongoing prospective assessment, patients complete the validated ICIQ-MLUTS and IIQ-7 questionnaires. Comparison of questionnaire items focused on SUI and QOL was performed and compared to 12 non-PFOP patients undergoing prostatectomy. Non-PFOP patients received standard PFMT education provided by their treating urologic oncologist.

**Results:** Mean patient age (62 vs 63 years), EBL (281 vs 229 ml), proportion of patients undergoing adjuvant radiotherapy (8%, both cohorts) or lymph node dissection (85% vs 92%), and baseline SUI domain scores (0.13 vs 0.05) were similar in comparison of PFOP versus non-PFOP cohorts (p=NS, all comparisons). ICIQ-MLUTS SUI domain items scores across all time points are shown in Figure 1. At 6-month follow-up, men enrolled in PFOP demonstrated significantly improved domain scores when compared to controls (PFOP 0.83 (SD 1.19); non-PFOP 2.42 (SD 1.38))(p<0.01). Similarly, a higher proportion of PFOP patients reported absence of incontinence, defined as SUI domain score of 0 (PFOP 6/13 (46%); non-PFOP 1/12 (8%)). Similar pad per day quantity was reported across the cohorts (PFOP 1.08 (1.11); non-PFOP 1.25 (1.06))(p=NS). Superior IIQ-7 scores were also seen in the PFOP cohort (PFOP 2.33 (2.61); non-PFOP 4.50 (4.03)).

**Conclusion:** Specialized in-house PFMT performed by a fellowship-trained physician is associated with improved SUI outcomes and quality of life at 6-month follow-up. Patient accrual is ongoing to more comprehensively assess continence outcomes with minimum 12-month follow-up.

**Presentation #5**
**Barriers to Concomitant Atrial Fibrillation Ablation During Mitral Valve Surgery**

Michaela Berens

**Abstract:** Concomitant atrial fibrillation ablation during mitral valve surgery is an evidence-based practice that continues to be underutilized. Applying principles of implementation science, a survey of adult cardiac surgeons in two statewide quality collaboratives sought to uncover potential barriers to implementation that could be remedied by interventions in the future. Based on the responses to our survey, there is variation in the awareness of and practice of the evidence-based practice of concomitant AF ablation during mitral valve surgery. However, several barriers and interventions have been identified so that this mismatch between the evidence and clinical practice can begin to be remedied.

**Presentation #6**
**Climate Change and Human Health: incorporating environmental topics into the UVASOM experience**

Lena Bichell
The changing climate has an ever-growing and undeniable impact on human health. As physicians-in-training, medical students should be introduced to this interaction early to provide more effective and informed care in their future practice. With support from the MSSRP program and the Center for Health, Humanities, and Ethics and with research sponsor Prof. Marcia Day Childress, I spent this summer examining the role of a changing climate on human health and health care. To do so, I used a multi-pronged approach that included the following:

- Leading a weekly discussion group on climate change, race, and health. This discussion group was made up of volunteers from the SOM Class of 2023. Each session was thematically based and informed by academic scholarship, popular media, and creative resources on the topic
- Exploring how to incorporate the topic into the NxGen Curriculum. Using the discussion group structure as a starting point, I expanded my literature and resource review in order to design a fourth-year elective
- Connecting with local, regional, and national leaders in climate change-minded clinical care
- Connecting and collaborating with student groups at other institutions across Virginia and the mid-Atlantic

Each element contributed towards my goal of increasing current and future UVASOM students’ awareness of the evolving impact of climate change on human health and clinical care. The culmination of this project is the following framework for a fourth-year elective.

**Presentation #7**

**Differential Treatment of Hypertension in Spanish and English Speakers in Primary Care**

**Introduction:**

Alexa Caffio-Learner

Uncontrolled hypertension is a significant risk factor for cardiovascular diseases, cerebrovascular complications, and other severe sequelae. Previous research indicates that there are ethnic and primary language-based disparities in rates of controlled hypertension and possibly also in physicians’ treatment of hypertension and its comorbidities. This medical chart review seeks to identify potential differences in the management and pharmacological therapy of essential hypertension in patients whose primary language is English as compared to those who report a preference for Spanish.

**Methods:** This is a retrospective cohort study that reviewed the Epic database medical charts of patients with a diagnosis of hypertension that receive primary care at the University of Virginia (UVA) University Medical Associates (UMA). The study population includes patients over the age of 18 years that have a “diagnosis” of hypertension and report a preferred language of either English or Spanish according to the Epic SlicerDicer program. To be eligible, subjects must also have attended at least one appointment with a primary care provider (PCP) at UMA between January 1, 2019 and December 31, 2019. Epic SlicerDicer reported a list of potentially eligible patients identified by Medical Record Number (MRN); these MRNs were stored on a secure UVA Health System server and assigned to subject identification numbers created by the researcher in order to protect patient privacy.

**Results:** The English-speaking group and the Spanish-speaking group seem to have similar mean ages, number of PCP visits in 2019, and blood pressures, on average. The English-speaking group seems to be taking a higher number of relevant medications than the Spanish-speaking group, but it is not yet clear whether this difference is statistically significant. The rates
of obesity, cardiac diseases, complications of diabetes mellitus, cerebrovascular events, dyslipidemias, vascular diagnoses, kidney diseases, and obstructive sleep apnea appeared to be higher in the English-speaking group. In contrast, the percent of patients with diabetes seemed to be similar in both groups. **Conclusions:** This project still needs statistical data analysis and potentially also corrections in analysis that control for other variables. There will also be a demographic analysis comparing the patient population included in this study to the wider population including people without hypertension.

**Presentation #8**

Utilizing telemedicine to provide effective healthcare services to Charlottesville, VA’s vulnerable homeless population during the COVID-19 pandemic

Jacqueline Carson, Ashwin Mahesh, Becca Kowalski, Margot Mellette, Rohan Karanth, Hayne Noh, Priya Kundar, Jessica Lin

**Background:** On any given night in Charlottesville, Virginia, there are approximately 188 individuals experiencing homelessness. Compared to the general population, rates of chronic medical comorbidities, mental health disorders, and substance misuse disorders are elevated. This higher disease burden is compounded by a lack in access to care in addition to a gap in trust of the healthcare system. In May 2019, University of Virginia (UVA) Health System opened an in-person biweekly community health clinic at the Haven, Charlottesville’s day shelter, staffed by UVA medical students and physicians. Clinic-associated health navigation nights run by medical students were held weekly at the city’s seasonal emergency shelter. The clinic provided 61 appointments for both acute and chronic conditions prior to March 2020, when the clinic closed its doors due to the initial lack of personal protective equipment. Furthermore, the city secured funding for 50 of Charlottesville’s highest risk homeless individuals to shelter-in-place at a local hotel during the pandemic, rather than in the congregate shelter setting.

**Methods:** In the early days of the pandemic, the clinic student team provided weekly phone calls to hotel guests to monitor for symptoms and provide clinical support, such as prescription deliveries. In June 2020, a weekly virtual clinic was introduced at the hotel with support from UVA Telemedicine in order to continue to provide medical and psychiatric care to this patient population. Set up in the lobby of the hotel and facilitated by in-person student volunteers, appointments were conducted over Webex with an Internal Medicine resident and attending using an iPad. Physical exam signs were transmitted to providers electronically utilizing a combination of wireless technology and communication with in person volunteers. Health navigation services were resumed and expanded. In coordination with the Thomas Jefferson Health Department, the clinic has also sponsored COVID testing, flu vaccines, HIV and Hepatitis C testing at the hotel.

**Results:** Over 4 months, 30 general medicine visits and 4 psychiatry visits were conducted. On average, 4 blood pressures were taken and 5 individuals were assisted with appointments, insurance, prescriptions, or health counseling during each weekly health navigation session. Over 40% of all hotel guests have engaged with health navigation or clinic services since the clinic’s return.

**Conclusion:** The coronavirus pandemic has exposed major gaps in our healthcare system and disproportionately targeted vulnerable patient populations, including those experiencing homelessness. Our model has allowed for innovative and effective care to the homeless population throughout the pandemic, and aims to provide an easily adaptable framework that can be translated to other settings such as nursing homes, group homes and jails in order to expand healthcare access for vulnerable populations in any community.
Presentation #9
Addressing Needs and Barriers to Treatment Through Secure Messaging in a Smartphone App for Patients Living with HIV

Michael Chen

**Introduction:** PositiveLinks is a smartphone application aimed at improving linkage and retention in HIV care for patients of the UVA Ryan White HIV clinic. Through the app, patients have access to a secure-messaging portal to converse with their providers and facilitate management of their HIV care. Previous analysis of PositiveLinks showed that patients often used secure messaging to discuss social needs with their providers. Other studies have also demonstrated that secure messaging increases rapport between patients and their providers.

**Objectives:** To evaluate the role PositiveLinks secure messaging has in addressing reported barriers to care and social needs by patients of the UVA Ryan White HIV clinic.

**Methods:** This project studied 88 patients who were enrolled in PositiveLinks from 2016 to 2017. At enrollment and after 6 months, patients responded to a *Barriers to Treatment* questionnaire to determine their barriers to care and basic needs, such as housing insecurity. Messages sent between patients and providers were analyzed for social needs content and coded to identify the needs being addressed, such as insurance issues. Patients were stratified into classes based on whether they had used messaging to discuss the different social needs with their providers, and these classes were compared using Fisher's Exact T-tests.

**Results:** There was a significant decrease in distrust of the medical system between patients who used messaging for social needs in general (p = 0.01) or for insurance issues (p = 0.00) and those who did not. However, this project did not identify a greater decrease in needs or barriers reported by patients based on their use of messaging related to social needs.

**Conclusion:** Secure messaging in PositiveLinks is an excellent way for patients to connect with their care team outside of the hospital, and secure messaging appears to help decrease distrust patients may have of the medical system. Other barriers and needs likely are multifactorial and require either more time to correct or require intervention beyond the scope of only secure messaging. Studying the current, larger PositiveLinks patient base for change in barriers to treatment and needs over a longer period will provide a more robust data set for analysis.

Presentation #10
Tibial Mechanical Axis is Non-orthogonal to the Floor in Varus Knee Alignment

Christopher C. Chung

**Background:** Classical models of the knee assume the joint line is parallel to the floor and the tibial mechanical axis (TMA) is orthogonal to the floor. Our study characterizes the angle subtended by the TMA and floor during bipedal stance, called the Tibial Axis Orientation Angle (TAOA), and tests the assumption that the TMA should be orthogonal to the floor.

**Methods:** We reviewed the non-operative knee on full-length, standing radiographs in 100 patients undergoing total knee arthroplasty between 2013 and 2017. Radiographic measurements were obtained for hip-knee-ankle axis (HKA), medial proximal tibial angle (MPTA), joint line orientation angle (JLOA), and tibial axis orientation angle (TAOA) and correlated by regression analysis. The cohort was stratified by HKA alignment to determine statistical differences in knee angle values. Demographic data were collected to assess associations with knee angles.
**Results:** Our cohort included 68 patients, with 56% female and average age of 62.3 years. Varus knees comprised 56% of the cohort, with 7% neutral and 37% valgus. The cohort demonstrated an MPTA of 3.06°, TAOA of 2.67°, and JLOA of 0.36°. Varus knees had a higher MPTA (4.26°) and TAOA (4.74°) than valgus knees (p<0.001, p<0.001). MPTA and TAOA were correlated on regression analysis ($r^2=0.465$) and all angles were statistically different between sexes. **Conclusion:** The angle between the TMA and floor, called TAOA, is not orthogonal in normal knees, contrary to assumptions in classical biomechanics. Knee angles vary significantly between varus and valgus cohorts, and the distinction between these cohorts should be noted when evaluating normal joint line angles.

**Presentation #11**  
**Cost Comparison Between Percutaneous Microwave Ablation vs Partial Nephrectomy for Small Renal Masses**

Anthony DeNovio

**Introduction:** The incidence of primary renal malignancies in Americans has increased since 2015. The increased incidence has led to classification of small renal masses (SRMs). SRMs are commonly defined as incidentally-discovered contrast-enhancing renal tumors with largest-diameter less than 4 centimeters. Treatment modalities for SRM patients include Robotic-Assisted Partial Nephrectomy (PN) and Percutaneous Microwave Ablation (MA). There is still uncertainty in determining the most cost-effective option for patients. We propose a cost comparison to investigate the financially optimal procedure for SRM patients. The comparison accounts for direct, indirect, and physician-related costs of uneventful procedures, periprocedural complications, and postprocedural complications. **Methods:** We conducted a retrospective cohort analysis using our IRB-approved SRM database. The database was queried for patients treated with either MA or PN from 2015-2020. Financial costs related to the procedural encounter as well as costs related to complications were collected. Statistical analysis was performed in SAS using Student's T-Test and Wilcoxon Rank-Sum Test. A total of 279 patients were identified, 165 patients underwent MA and 114 underwent PN. Financial data was able to be obtained for 268 of these patients, with 157 of them in the MA category and 101 in the PN category. Total cost is represented by the sum of total medical center cost (sum of direct and indirect cost) and physician related cost. **Results:** The mean total cost was $20,437 for PN and $10,220 for MA (p<.0001). The average medical center cost associated with MA was lower ($5,313) than the cost associated with PN ($15,223) (p<.0001). Mean physician related costs were $4,907 for MA and $5,214 for PN (p=0.012). 5 patients who underwent MA experienced complications (3%) and 8 patients who underwent PN experienced complications (7%). For those patients who underwent MA and did not have a complication, average medical center cost was $5,174 compared to $8,990 for those who did have a complication (p=0.36). For those patients who underwent PN and did not have a complication, average medical center cost was $15,138 compared to $28,940 for those who did have a complication (p=0.008). **Conclusion:** MA demonstrates lower cost than PN for treatment of SRMs. Complications that occurred related to MA were less costly than those incurred from PN.
Presentation #12
Predictive Value of the Bony Facial Trauma Score: The UVA Trauma Experience

Sebastian Dobrow

**Background:** In 2016 the University of Virginia developed the Bony Facial Trauma Score (BFTS), a validated scale to quantify bony trauma of the face. Scores were collected on all trauma patients over two years and used to assess the predictive value of the score.

**Study Objective:** To use a validated facial trauma score to standardize quantification of bony facial trauma and assess the score’s correlation with relevant patient outcomes including need for admission, need for operative repair, need for tracheostomy, and mortality.

**Design Type:** Retrospective review

**Methods:** A retrospective analysis was performed on patients who sustained bony facial trauma and were assessed by the University of Virginia – Department of Otolaryngology between 1/1/2017 to 11/30/2019. The primary outcome measures were admission status, need for operative management, tracheostomy placement, and mortality. Logistic regression modeling was used to measure the association of the BFTS and the above outcome measures. All patients with a non-zero BFTS were included in the series.

**Results:** A total of 308 patients were included in the study. On average, patient BFTS was 6.3 (SD, 7.26) while age was 45.1 years (SD, 22.3). The most common mechanisms of injury were motor vehicle accident (44.8%) and ground level fall (32.5%). Controlling for age, BFTS was found to have a statistically significant ($p < 0.05$) correlation with each outcome measure: admission (OR 1.06, 95% CI 1.01 – 1.12), mortality (OR 1.05, 95% CI 1.00 – 1.09), tracheostomy placement (OR 1.11, 95% CI 1.07 – 1.17), and need for operative management (OR 1.16, 95% CI 1.11 – 1.22).

**Conclusion:** The findings of significant correlation between the BFTS and our clinical outcome measures validate its use as a helpful clinical tool. Additionally, the correlation with need for tracheostomy placement is particularly compelling in that early intervention in these patients could prevent known complications associated with prolonged intubation. Further research will be done to assess the score’s association with length of stay, operative duration, and cost of care.

Presentation #13
Evaluating Outcomes of Bony Facial Trauma: ICU Needs and C-Spine Trauma

Sebastian Dobrow

**Background:** In 2016 the University of Virginia developed the Bony Facial Trauma Score (BFTS), a validated scale to quantify bony trauma of the face. Scores were collected on all trauma patients over two years and used to assess the predictive value of the score.

**Study Objective:** To use a validated facial trauma score to standardize quantification of bony facial trauma and assess the score’s correlation with relevant patient outcomes including ICU needs and C-spine injury.

**Design Type:** Retrospective review

**Methods:** A retrospective analysis was performed on patients who sustained bony facial trauma and were assessed by the University of Virginia – Department of Otolaryngology between 1/1/2017 to 11/30/2019. The primary outcome measures were need for ICU admission, ICU length of stay (LOS) and C-spine injury. Binary logistic regression modeling was used to measure the association of the BFTS and need for ICU admission. Multivariate linear
Regressions were used to measure the association of the BFTS with ICU LOS and C-spine injury. All patients with a non-zero BFTS were included in the series.

**Results:** A total of 312 patients were included in the study. On average, patient BFTS was 6.3 (SD, 7.3) while age was 48 years (SD, 22.4). The most common mechanisms of injury were motor vehicle accident (41.0%) and ground level fall (25.6%). Controlling for age, BFTS was found to have a statistically significant ($p < 0.05$) correlation with each outcome measure: need for ICU admission (odds of admission increase by 6.9% for each unit BFTS increase, $p=0.001$), ICU LOS (LOS increases by 1.4 days per unit mandible BFTS increase, $p<0.001$), C-spine injury (correlates with total BFTS, $p=0.003$).

**Conclusion:** The BFTS was created using correlation to objective measures of force and our findings significant correlation between the BFTS and clinical outcome measures validate its use as a helpful clinical tool. If adopted both at trauma centers like UVA and in the broader community, the BFTS represents a useful tool to help stratify acuity of patients in terms of ICU needs, disposition and help guide C-spine precautions. Further research will be done to assess the score’s association with length of stay, operative duration, and cost of care.

**Presentation #14**

**Antibiotic spacer**

Patrick Dunne

**Intro:** Antibiotic impregnated cement knee spacers are part of a two-stage technique to revise infected total knee arthroplasties for a substantial number of patients. A prosthetic joint presents a risk for infection, and resolution of these infections often requires surgical interventions. At present, prosthetic joint infections (PJI) require revision in a two-stage process with a temporizing measure of either dynamic or static antibiotic-impregnated spacer which provides antibiotic delivery and stability before definitive management. The final desired surgical outcome is revision arthroplasty. Whereas the surgical management of a PJI can be achieved through dynamic or static spacers, no robust randomized control trial exists comparing the surgical outcomes between the proposed interventions.

**Methods:** In a retrospective study across 2 academic medical centers outcomes were followed for 66 individuals with static antibiotic spacers for a prosthetic knee infection. Patients were assessed for preoperative risk factors including age, BMI, number of prior surgeries, smoking status among others. Infection risk factors were assessed using the McPherson Rating for PJI. The outcome date recorded for this study includes post-operative soft tissue injury, fracture, next surgery performed, and the definitive outcome among other variables.

**Results:** Our analysis revealed that the postoperative course was complicated for a significant number of patients by progressive bone loss, periprosthetic fracture, soft tissue injury, and wound compromise. Only 45% of patients included in this study had “successful” outcomes as defined by revision arthroplasty with the eradication of infection. 15% of the patients required subsequent surgeries. The remainder of the patients had suboptimal outcomes defined by arthrodesis, amputation, and death.

**Conclusion:** Our analysis expands upon the body of literature that suggests that static spacers are associated with poor prognostic outcomes with a high degree of morbidity and mortality. This data serves to further inform clinical judgment in managing a prosthetic joint infection.
Presentation #15

Allogeneic Hematopoietic Transplant Complications Requiring Transfer to Medical Intensive Care Unit (ICU) at the University of Virginia Health Care System

Omar Elghawy

Introduction: Although hematopoietic stem cell transplantation (HSCT) has revolutionized the treatment of various hematological malignancies, it concurrently dysregulates the patient’s immune system. In this study, we review the most common indications of post-HSCT patients to be admitted to the MICU and their outcomes after being admitted.

Methods: A single-center, retrospective, cohort study of 233 patients who had received an allogeneic hematopoietic stem cell transplant at the University of Virginia Hospital between January 1, 2012 and May 31, 2020 was conducted. Patients were excluded from the study if they were not admitted to the ICU after their hematopoietic stem cell transplant.

Results: Thirty-eight patients were identified that were admitted to the MICU post-HSCT. The median age was 56.5 and 22 (57.9%) patients were male. Indications for transplant included AML (n=13), MDS (n=8), CML (n=5), ALL (n=4), HL (n=4), myelofibrosis (n=2) and NHL (n=2). The marrow products used were peripheral blood stem cells (73.6%) umbilical cord blood stem cells (21.1%) and bone marrow (10.1%). Patients had a haploidentical donor (n=6), a matched related donor (n=7), or a matched unrelated donor (n=19). 11 patients had myeloablative conditioning while 27 had reduced intensity conditioning. The median time to engraftment was 17 days. The median days post-transplant to admission to the MICU was 152. 20 patients had sepsis, 19 patients had GVHD, 6 of which had acute GVHD and 13 of which had chronic GVHD. 9 patients had AHRF, 5 patients had MI, 3 patients had ARDS, 18 patients entered shock. 8 (21.1%) patients relapsed with a median relapse free survival of 282 days. 12 patients (31.6%) survived the MICU with a median survival of 346 days. The 26 patients who passed in the MICU had a median survival of 176 days post-transplant.

Conclusion: This study has demonstrated that the most common indications for MICU transfer are GVHD, sepsis, acute respiratory failure with hypoxia and hypovolemic shock which are associated with significant mortality. Further work is required to determine clinical interventions that could potentially reduce the number of patients admitted for these causes and to develop superior treatment modalities to reduce the mortality for these causes.

Presentation #16

Clinical Outcomes of POEMS Patients Receiving Autologous (Auto) Hematopoietic Cell Transplantation (HCT) at the University of Virginia Health Care System

Omar Elghawy

Background: POEMS syndrome (polyneuropathy, organomegaly, endocrinopathy, M-protein, skin changes) is a rare paraneoplastic syndrome believed to be caused by a plasma cell proliferative disorder. The disease is characterized by its variable clinical presentation involving multiple organ systems, lack of established treatment guidelines and poorly defined long-term outcomes. Our aim in this study is to describe the longitudinal clinical course in POEMS patients receiving autologous stem cell transplantation (ASCT).

Methods: A single-center, retrospective, cohort study of patients with POEMS syndrome who received auto HCT from 10/1/14 - 12/1/17 was conducted. Data collection and analysis were performed in accordance with University of Virginia Institutional Review Board
guidelines. Variables collected from the electronic medical record included patient demographics, clinical characteristics, laboratory data, HCT related data, post-HCT complications, and patient outcomes.

**Results:** Six patients with POEMS syndrome were identified. Five of the six identified as White or Caucasian while the remaining patient was African American. Four of the six patients were male. The median age of diagnosis was 63.5 years and the median starting weight was 69.9 kg. All six patients presented with lower extremity edema, muscle weakness, elevated VEGF, and demyelinating peripheral neuropathy, although foot drop gait was only described in four of these patients. Hyperpigmentation was present in four patients. None of the patients exhibited organomegaly, and one patient exhibited hypothyroidism. SPEP analysis revealed one patient had elevated IgA lambda, one patient had elevated IgM lambda 2 patients had elevated IgG kappa and three patients had elevated IgG lambda. Cytogenetic analysis and FISH were performed on all patients although no abnormalities were detected. All patients were conditioned with melphalan and received autologous stem cell transplantations. The patients had a median engraftment time of 12 days. No patients exhibited any signs of engraftment syndrome, graft failure, serious infection or and death. No sign of relapse was observed in any of the patients and the current median relapse free survival is 1347.5 days. One out of six patients expired over the course of this study at 990 days post-transplant due to fluid overload.

**Conclusion:** ASCT has been shown to be a viable treatment modality in the treatment of POEMS syndrome given the encouraging outcomes in the patients observed in this study. While this study adds to the current body of literature on POEMs treatment, further work is required to establish a standard of care in this rare disease.

**Presentation #17**

**Lineage Tracing of Axin2 Positive Cells in the Dentate Gyrus**

Faraz Farzad

**Introduction:** The Wnt/β-catenin pathway has been known for years to play a crucial role in initiating growth and proliferation, and maintaining homeostasis in many tissues. More recently, research into postnatal neurogenesis in the subgranular zone of the dentate gyrus and the subventricular zone has uncovered a significant role for the Wnt/β-catenin pathway. Axin2 specifically is known to be a negative regulator of the Wnt/β-catenin pathway, allowing for labeling and monitoring of these cells. In an attempt to advance our current understanding of the role that the Wnt/β-catenin pathway plays in postnatal neurogenesis in the dentate gyrus, we conducted a neuronal lineage tracing experiment to measure the proliferation of Axin2+ cells in a pulse-chase manner at various time points after initial tamoxifen pulse. We hypothesized that the Axin2+ cell lineage proliferates and contributes to neurogenesis in the dentate gyrus.

**Methods:** To conduct this experiment, we made use of the Cre mouse model. Specifically, our design included 4 groups of 3 mice with the Axin2-CreER allele modification for a total of 18 hippocampal specimens in each of the 4 groups. All mice received a Tamoxifen pulse on day t=0 and they were sacrificed and assessed after 7, 30, 90 and 180 days depending on what group they were assigned to. After these mice were sacrificed, slices were stained with DAPI, EdU and RFP (Axin2+ marker). Total signal counts with each stain were determined across all cells and normalized per 1000 total cells (as determined by DAPI staining). Subsequently, we ran ANOVA analyses on the normalized and raw data to assess for trends.
Results:  ANOVA analysis revealed a statistically significant (P<0.01) difference in the density of Axin2+ cells in the specimens sacrificed 90 days after tamoxifen injection when compared to other groups. There was also a statistically significant (P = 0.0288) positive linear trendline across time. The marked Axin2+ granule cell population increased until around 90 days, but subsequently decreased between 90 and 180 days. Analysis of EdU+ cells and Axin2+/EdU+ cells did not show any statistically significant differences or trends across groups.

Discussion: Interestingly, our work showed that the Axin2+ granule cell population increased until around 90 days, but subsequently decreased between 90 and 180 days. This timeline is also backed by a similar study our lab conducted in the subventricular zone. We believe that this could indicate a limited lifespan of these neurons, however, further research is required to confirm this. Our results support that Axin2+ cells play a significant temporal role in postnatal neurogenesis. Our work sets the stage for further research into the function of these cells and their abundance in excess of 180 days. Additionally, research is required to uncover the cellular and signaling mechanisms that initiate the apoptosis that we see between 90 and 180 days. This exciting and upcoming field has countless applications in cancer research and potential ischemic stroke treatment efforts.

Presentation #18
Experience of HIV Healthcare Providers with a mHealth App for Improving Patient Engagement in HIV Care”

William Ford

Introduction: HIV remains an important cause of morbidity and mortality in the United States, especially in select sub-populations. Effective therapy is available, but its success is highly dependent on strict and lifelong adherence. Patient engagement in care has been shown to improve treatment adherence and clinical outcomes, and a number of mobile-phone-based interventions have been designed to help improve patients with other chronic conditions be more engaged in their care. PositiveLinks (PL) was designed as such an intervention for select people living with HIV (PLWH) who receive care at the Ryan White clinic at the University of Virginia (UVA), and it is constantly being monitored and evaluated for ease of use and effect on health outcomes. The app is linked to the Ryan White clinic and is used by clinic staff to communicate with patients and coordinate their care. Healthcare providers (Providers) were interviewed as part of ongoing evaluations of app usage to determine the utility and effectiveness of the app in improving patient engagement in their HIV care.

Methods: Staff at the UVA Ryan White clinic were interviewed in March 2017, 12 months after the implementation of PL version 2.0. They were asked to assess their experience with the PL app and its individual features as well as offer recommendations for improvement. The interviews were recorded and transcribed, and the transcripts were coded by two independent coders and analyzed using the Dedoose qualitative research software. The outcomes of interest were the frequencies of interviewees who used each individual app feature and the reasons they liked or disliked specific features.

Results: Twelve (12) interviews were conducted with a variety of care providers including three clinical case managers and two community health workers. Nine of the 12 interviewees are not medical care providers, and none of the providers interviewed are considered primary HIV care providers. Seven (58%) interviewees reported not using the lab values feature, and three (25%) reported not using the appointment tracking feature. Five (42%) interviewees reported not using
the mood and stress or medication tracking feature, and 4 (33%) reported not using the secure messaging feature. Overall, most of the positive feedback received was related to the app’s tendency to improve communication between patients and providers. Common reasons for disliking or not using an app feature were technical glitches, poor integration of the app with the electronic medical record (EMR), and inappropriate use or use in unintended ways of features by patients or other providers.

**Conclusions:** A heterogenous group of care providers at the UVA Ryan White clinic gave generally positive feedback on their experience with a mobile-phone-based app designed to help their patients with HIV be more engaged in their care. Feedback regarding the secure messaging and mood/stress tracking features tended to be especially positive, which was expected since these features were designed with Providers in mind. Technical glitches, poor integration of PL data with the EMR, and improper use of specific app features can all be addressed as app development continues. None of the interviewees were primary HIV care providers, so the results do not include the perspective of a vital group of providers at the Ryan White clinic. This gap should be the focus of future efforts to elicit feedback from providers on PL usage and usability.

**Presentation #19**

Healthcare professionals’ perspectives and experience in caring for pre- and post-partum mothers and their infants.

Abby Halm

**Background:** While she is pregnant, a woman’s health and healthcare is at the center of attention. However, after a woman gives birth, this focus shifts from the mother, who has her own unique postpartum needs to her newborn infant. More than 40% of new mothers experience postpartum conditions such as sleep loss, stress, physical exhaustion, sore nipples, backache, weight control issues, and lack of sexual desire that may arise before a woman’s standard follow-up appointment 6 weeks postpartum. Both women and providers have expressed concerns with the discontinuity of care that women experience as they transition from pregnancy to the postpartum period. Many agree that there is room for improved education, communication, and continuity of care during the transition from pregnancy to the postpartum period; however, there is need for more research to investigate which areas - both topical and temporal - could benefit from such interventions. We were interested in learning providers’ perspectives on where and from whom patients should turn to for education related to both their own pre- and postpartum care and the care for their new infant. And finally, we strove to gain providers’ experience-formed perspectives on how the care of postpartum women could be improved.

**Methods:** We recruited healthcare providers from the University of Virginia Health System’s departments of Pediatrics, OB/GYN, and Family medicine by email. Participants completed a semi-structured telephone interview with the student researcher. The interview consisted of of a mix of multiple choice and free response questions and closely mirrored the work of a previous UVA Medical Student, Cristalle Madray, who interviewed new mothers about the post-partum experience.

**Results in Progress:** We have collected 15 semi-structured interviews (average time = 40 min 29 s) with attending physicians (13), a nurse practitioner (1), and a resident physician (1) from the departments of Pediatrics (10), OB/GYN (1), and Family Medicine (4). We aim to enroll an additional 9 OB/GYN providers before moving on to the analysis phase of this project.
Presentation #20
Detection of Osteoarthritis Inflammation by Single-Photon Emission Computed Tomography Based on a Macrophage-Targeting Peptide cFLFLF

Anthony J. Ignozzi

**Purpose:** Although inflammation has been recognized as a key process in the pathogenesis of osteoarthritis (OA), there remains no clinical non-invasive imaging modality that can specifically diagnose inflammatory activity of OA. In this study, a formyl peptide receptor 1 (Fpr1) targeting probe cFLFLF-PEG-HYNIC-\(^{99m}\)Tc and Single-Photon Emission Computed Tomography (SPECT) imaging is used to detect inflammatory activity by targeting macrophages involved in the pathogenesis of OA.

**Procedures:** In vitro experiments were performed to evaluate Fpr1 expression during macrophage inflammatory response. Anterior cruciate ligament transection (ACLT) surgery was performed and histological and MRI data was assessed to analyze the OA model in both mice and rats. The radioactive probe cFLFLF-PEG-HYNIC-\(^{99m}\)Tc and SPECT imaging were used to corroborate OA-related inflammation and compare ACLT vs sham knees.

**Results:** In vitro macrophage activation resulted in a remarkable increase in Fpr1 expression. In vivo experiments in mice and rats produced similar results. MRI and histological analysis demonstrated significant joint degeneration in the ACLT knee. The ACLT knee produced a much stronger signal from the probe when compared to the sham knee. It is important to note the ratio of ACLT/sham knee signal intensity decreased with OA progression, indicating greater differences earlier in the progression of OA.

**Conclusion:** The radioactive probe cFLFLF-PEG-HYNIC-\(^{99m}\)Tc and SPECT imaging is effective for detecting and monitoring inflammation during OA progression by targeting Fpr1 expression in the knee joint.

Presentation #21
Radiographic and Clinical Results of Combined Coracoclavicular and Acromioclavicular Ligament Reconstruction Compared to Isolated Coracoclavicular Reconstruction

Anthony Ignozzi

**Background:** Despite numerous surgical options, complications and radiographic loss of reduction rates remain high after operative treatment of acromioclavicular (AC) joint injuries.

**Purpose:** We sought to determine whether the addition of AC ligament reconstruction to standard coracoclavicular (CC) ligament reconstruction would improve radiographic reduction maintenance and complication rates for type III-V AC dislocations.

**Methods:** This single institution retrospective study analyzed all patients who underwent a hybrid synthetic/graft wrap CC reconstruction without tunnels with additional AC reconstruction/repair from January 2013 through August 2019. This 26-patient cohort was compared to a 1:1 sex- and age-matched control group that underwent CC reconstruction without AC reconstruction. CC distances on postoperative radiographs were compared to normal contralateral shoulders.

**Results:** Of the 93 patients who underwent AC reconstructive surgery during this time period, 26 patients (96% male) met inclusion criteria. The AC/CC cohort had 23.5% type III injuries, 23.1% type IV injuries, and 53.8% type V injuries, similar to the control group. Final radiographs of the operative shoulder’s CC distance were a mean 0.9mm (+/-4.0mm) greater than the contralateral shoulder (9.6mm vs 8.7mm) in the AC/CC cohort. Final radiographs of the operative shoulder’s coracoclavicular distance were a mean 4.0mm (+/-4.7mm) greater than the
contralateral shoulder (13.3mm vs 9.3mm) in the CC control group, a significant difference (p=0.014). The AC/CC reconstruction group had less patients with a loss of reduction >5mm (11.5% vs 38.5%, p=0.025). The complication rate in the CC control group was higher than the AC/CC cohort (30.7% vs 7.7%, p=0.035). The reoperation rate was also greater in the CC control group (8 reoperations vs 1 reoperation, p=0.010).

**Conclusion:** Hybrid CC reconstruction with AC reconstruction shows promising early results with improved radiographic reduction maintenance and decreased complication rates compared to isolated CC reconstruction techniques in this cohort study.

**Presentation #22**
**A Failed Repair of a Type 1 Anterior Cruciate Ligament Tear: Case Presentation**

Anthony Ignozzi

**Background:** Anterior cruciate ligament (ACL) repair has experienced a resurgence of interest in the last twenty years as our understanding of the healing potential of the ACL has evolved. Sherman Type 1 (proximal avulsion) tears have shown the greatest ability to heal after primary repair. However, there remains insufficient evidence that long term outcomes after ACL repair of type 1 tears are equivalent to or better than the gold standard of ACL reconstruction.

**Case presentation:** The patient is a 17-year-old, 144 lb., 5'6" tall female that presented with right knee pain due to an injury that occurred several weeks prior while she was playing soccer. Physical exam in the right knee was remarkable for trace effusion, positive Lachman test, and positive pivot shift test. An MRI of the right knee revealed a type 1 proximal avulsion ACL tear with intact collateral ligaments and menisci. The ACL repair was performed and confirmed with a negative Lachman test. The patient progressed well through the standard physical therapy rehabilitation protocol. At the 12-week follow-up, she presented with side-to-side KT-1000 measurements of 3mm translation on her operative knee, and 4mm on the contralateral. She returned to full sport and activity at 8 months. The patient then presented over 3 years later at the age of 21 with symptoms of right knee pain and the sensation of instability that developed insidiously over 4 months without an identifiable traumatic episode to the knee. Physical exam of right knee was remarkable for a trace effusion, positive pivot shift test, and an equivocal Lachman exam. Repeat MRI of the right knee demonstrated a re-tear of the proximal ACL. After a discussion of conservative and surgical options with the patient, she elected to proceed with ACL reconstruction.

**Conclusions:** Despite the proposed advantages of proximal ACL repair and positive short and mid-term outcomes of recent studies, the 17-year-old female patient presented in this case returned over three years later with a failed ACL repair that required reconstruction. Even with careful patient selection, utilization of an established surgical technique, and reassuring post-operative benchmarks, an acceptable outcome was not achieved. Further research on long-term outcomes of proximal avulsion ACL repair, particularly in young, active patients, is necessary to guide surgeon decision-making.

**Presentation #23**
**Biologic therapy and reactive therapeutic drug monitoring in patients with inflammatory bowel disease and primary sclerosing cholangitis**

Varun Jain
Background: Primary sclerosing cholangitis (PSC) is strongly associated with inflammatory bowel disease (IBD). Patients with concomitant PSC-IBD are at increased risk for IBD-related dysplasia and malignancy, however the clinical course of IBD is often less severe. The past decade has seen an increase in therapeutic options for patients with IBD with the approval of additional biologic and small molecule therapies. With the increased use of biologic therapy, therapeutic drug monitoring (TDM) has also increasingly been used in clinical practice, with reactive and proactive strategies being implemented in clinical care. The aim of this study was to identify the prevalence of biologic use and reactive TDM in a cohort of PSC-IBD patients.

Methods: Retrospective analysis of patients with PSC and IBD on biologic therapy who underwent reactive TDM from January 2018 to August 2020 at the Digestive Health Clinic at the University of Virginia. Demographic data including age, gender, disease duration, and comorbid conditions were recorded. IBD extent and behavior were recorded according to the Montreal Classification. Treatment outcomes including therapy adjustments after TDM were obtained.

Results: A total of 157 patients with PSC-IBD were identified during this period. Of these, 29 patients (19%) were treated with a biologic therapy during the study period. Thirteen PSC-IBD patients had reactive TDM performed due to primary or secondary loss of response to biologic therapy. An additional patient who underwent proactive TDM was identified but not included in the analysis. Median duration of IBD in this group was nine years, and the median duration of PSC-IBD concomitantly was 5.2 years. Nineteen TDM tests were obtained in these thirteen patients. Of these, subtherapeutic drug levels were found in ten, and three detected anti-drug antibodies. Seven showed appropriate trough levels. TDM resulted in a change to IBD therapy (i.e. dose escalation, change in biologic therapy used, or addition of IBD medication) in 16 out of 19 tests. The remaining two resulted in no change to current therapy.

Conclusion: Herein we describe a series of biologic TDM data in PSC-IBD patients. Although PSC-IBD may have a less severe clinical presentation, our experience demonstrates that PSC-IBD patients on biologic therapies frequently have an aggressive clinical course. In this cohort of patients, a reactive TDM strategy demonstrated a high incidence of subtherapeutic trough levels and anti-drug antibodies. Therapy changes occurred in over 80% of reactive TDM tests. Future studies should focus on whether a proactive TDM strategy yields improved clinical outcomes in the PSC-IBD patient population.

Presentation # 24
Intranasal Deferoxamine: the future of neurological disease therapy?

Jacob Kosyakovsky

Disease-modifying therapy for neurological disease remains one of the greatest gaps in modern medicine. Herein, we argue the promise of intranasal (IN) delivery of deferoxamine (DFO), a high-affinity iron chelator, for treatment of neurodegenerative and neurovascular disease. An overwhelming body of preclinical and early clinical data has demonstrated that IN DFO and other iron chelators have strong disease-modifying impact in Alzheimer disease (AD), Parkinson disease (PD), ischemic stroke, and intracranial hemorrhage (ICH). Acting by the disease-nonspecific mechanism of iron chelation, we discuss how DFO counters each of these complex disease processes via multifactorial mechanisms. Furthermore, we consider emerging evidence that leads us to suggest mechanisms by which IN DFO may be beneficial in cognitive decline with aging, multiple sclerosis, other neurodegenerative diseases, traumatic brain injury, and vascular dementia. Weighing its known safety profile, superior delivery method, enormous preclinical efficacy from decades of work across multiple research groups, robust mechanisms, and potential applicability for almost all of neurological disease, we conclude that the case for further development of IN DFO is considerable.
Presentation #25
The Role of B Cells in Human Atherosclerosis

Cynthia Li

Atherosclerosis is a major contributor to cardiovascular disease, which is a leading cause of death globally. Development of atherosclerosis is mediated by chronic inflammation due to maladaptive immune responses to lipid accumulation in arterial walls. Recent research in mice and humans has demonstrated the important role of B cells in both the development and reduction of atherosclerotic plaques. The effect of B cells is subset-specific, and data from murine studies indicate that in general, the B1 subset is atheroprotective, while the B2 subset is atherogenic. Similar B cell subsets have been discovered in humans, but their role remains poorly understood. Current evidence suggests that human B1 cells spontaneously produce natural immunoglobulin M (IgM) that bind modified the oxidation-specific epitopes (OSE) and epitopes on apoptotic cells, thus inhibiting foam cell formation and promoting clearance of apoptotic cells. The human B2 cell subset includes plasmablasts, which produce IgG antibodies that have been associated with increased coronary artery stenosis. In this review, we focus on the mechanisms driving the effect of different human B cell subsets on atherosclerosis as well as B-cell targeting therapeutics. Given the widespread clinical use of immunotherapies that modulate B cell activity, it is important to elucidate the role of B cells in atherosclerosis, as these immunotherapies may have unintended cardiovascular effects.

Presentation #26
Evolving approach to tuberculosis testing in children

Nicholas Lolli

Background: Over the past decade, the evidence for using Interferon Gamma Release Assays (IGRAs) as primary tuberculosis (TB) screening in place of Tuberculin Skin Tests (TSTs) for children has grown, leading the AAP to issue increasingly stronger recommendations, especially for those less than 5 years old.

Methods: This was a retrospective analysis of children screened for tuberculosis within the UVA Health System from October 2010 to August 2020. Eligible patients were identified using TriNetX databases and demographic and clinical information was obtained through systematic Epic chart review. A total of 652 cases were included in this analysis that had a date documented with their TB screening test and existed in years 2010-2018, years with an adequate sample size. Cases were placed into one of three groups representing a practical implementation period for the midyear publications of Red Book and stratified by provider type, primary care physicians (pediatricians and family physicians) vs. subspecialists.

Results: For the periods 2010-2012, 2013-2015, and 2016-2018 IGRA % of total screening tests ordered by primary care physicians (± 95% CI) was 0% (± 0.5%), 13.3% (± 0.6%), and 20.2% (± 1.0%), respectively, $R^2 = 0.97$, $n = 466$. For subspecialists, percentages over time were 25.0% (± 3.6%), 46.0% (± 1.0%), and 32.8% (± 1.7%), $R^2 = 0.13$, $n = 186$.

Conclusions: Subspecialists used IGRAs more commonly than primary care providers and use was independent of guideline change. Primary care physicians showed a steady increase
over time in IGRA use and a very strong correlation with guideline change. Multiple factors
could explain the difference in trend. Subspecialty care often involves travel for patients, so a
one-day IGRA is more efficient than a two-step TST. Furthermore, the lower cost TST may be
more cost efficient in high volume primary care settings. Future work within the UVA Health
System should focus on cost effectiveness and patient preference in primary care clinics.

Presentation #27
Association Between Palliative Care Consultation and Advance Palliative Care Rates: A
Descriptive Cohort Study in Patients at Various Stages in the Continuum of Chronic
Kidney Disease
Kara MacIntyre

Despite evidence that advance care planning (ACP) benefits patients with serious illnesses,
there is a lack of information about which patients are referred for palliative care (PC)
consultation, the rate of PC consultation, and the outcomes of referrals in patients with
advanced chronic kidney disease/end-stage kidney disease (aCKD/ESKD). The objectives of
this study were to describe patient characteristics associated with PC consultations and to
determine the frequency and outcome of PC consultation on documented ACP discussions for
patients with aCKD/ESKD. This is retrospective observational electronic health record cohort
review on patients who were seen at the University of Virginia (UVA) hospital, clinics, and
dialysis units. Patients were studied along two time intervals. The time period January 1, 2015
to June 30, 2017 included all patients admitted to UVA during that time period with eGFR
<60mL/minute. Time period January 1, 2018 to March 31, 2019 included two cohorts: patients
with eGFR <15mL/minute who had died during study period excluding those who withdrew from
dialysis and those who were dialysis dependent and withdrew from dialysis. The results were
that aside from higher rates of PC consultation in patients with heart failure, none of the
demographic and comorbidity data studied affected whether or not a patient is referred to PC in
patients with aCKD/ESKD. PC consultation rates were low among all patients studied: 14.7% in
patients with eGFR <60 mL/minute, 28.9% in dialysis patients withdrawing from dialysis, and
57.1% in terminally ill patients with eGFR <15 mL/minute. In all cohorts, PC consultations were
associated with improved ACP. In conclusion, PC consultation is significantly associated with
better end-of-life outcomes with greater rates of ACP and hospice referral in patients with
aCKD/ESKD. Also, PC consultation rates remain low. Even in terminally ill patients with aCKD,
>40% were never seen by PC. Until policies and curricula better prepare nephrologists to
independently address ACP, collaboration between nephrologists and PC specialists is
recommended.

Presentation #28
Predictors of Lack of Trust in the Government as a Barrier to Health-Protective Behaviors
during the COVID-19 Pandemic
Erica Mark

Background: Trust in government recommendations regarding health-protective behaviors has
been shown to predict adherence to public health guidelines. During the COVID-19 pandemic in
the United States, government and federal guidelines have often been in conflict with each
other. Inconsistent messaging from politicians regarding the pandemic has led to public
confusion. Being well-informed is a crucial determinant of compliance with health-protective behaviors. In this study, we aimed to assess demographic differences in trust of both state and federal government guidelines.

Methods: A self-compiled, validated knowledge, attitude, and practices (KAP) questionnaire (Cronbach’s alpha 0.730, 0.687, and 0.629 respectively) was distributed via social media and completed by 774 people. After removing incomplete and international responses, 675 responses were used for data analysis. Questions within the attitude section utilized a 5-item Likert scale ranging from “strongly disagree” to “strongly agree.” \( \chi^2 \) analysis, comparing responses to specific questions with demographic information, was performed. Significance threshold was set at \( p < 0.05 \).

Results: Across all demographics, the majority of people (52.6%) did not trust federal guidelines. Larger household size (7+), residence in a state other than California, and use of radio or television as a primary source of information were factors associated with greater trust in federal guidelines. Use of scholarly articles as a primary source of information was associated with less trust in federal guidelines. Additionally, 20.6% of participants indicated that they did not trust state guidelines. Those in urban and suburban areas as compared to rural areas and those residing in California or New York, compared to other states, were more likely to trust state guidelines. Participants with a college education or above, female as compared to male or non-binary, Caucasian as compared to Hispanic, Asian, African American, or multiracial, and those who used newspaper as a primary source of information compared to those who did not, were more likely to trust state guidelines.

Conclusion: Understanding public trust in government regulations could assist in formulation of targeted health interventions. In particular, negative perceptions towards public health recommendations and government institutions can potentially explain rising COVID-19 cases. However, an analysis of individual adherence to public health guidelines must be explored to confirm that negative perceptions result in increased spread of the virus.

Presentation #29
Predictors of Atrial Fibrillation Severity

Erica Mark and Sarah Swinehart

Background: Atrial fibrillation (AF) is the most common arrhythmia worldwide, and numbers are projected to increase in the coming decades. The current number of Americans living with AF is estimated at 8.9 million with projections of an increase to 16 million by 2050. Demographic differences related to the severity of atrial fibrillation are unclear, though several studies suggest differences in severity based on gender. This study aimed to explore how gender, diet, ejection fraction and BMI influence severity of atrial fibrillation.

Methods: Patients with AF at a tertiary care center in Virginia who agreed to guided dietary intervention completed a food frequency questionnaire (FFQ) and AF severity score survey to assess baseline diet. The Severity of Atrial Fibrillation (SAF) Scale is a Canadian scale available through the American College of Cardiology Foundation. AF severity scores ranged from 0 to 4 with higher scores reflecting more severe effects on a patient’s quality of life. FFQ scores ranged from 0 to 100. Higher numbers indicated healthier food patterns. Chart review analysis was used to collect patient characteristics. Multivariable linear regression compared demographic variables with AF severity score.

Results: Females had higher AF severity scores when compared to males (\( \beta = 0.937; p = 0.021 \)). Lower ejection fractions were associated with higher AF severity scores (\( \beta = -0.063; p = 0.018 \)). BMI (\( \beta = 0.012; p = 0.747 \)) and FFQ scores (\( \beta = 0.018; p = 0.454 \)) were not significantly associated with AF severity score.
Conclusion: There may be value in using patient characteristics in predicting and monitoring severity of atrial fibrillation symptoms. Patient characteristics could be used as a tool to help guide intervention strategies and improve patient outcomes.

Presentation #30
Getting smarter in the fight against pediatric tuberculosis: analysis of treatment regimen trends

Elizabeth (Deglau) McGriff

Background: There are three evidence-based shorter-course treatment regimens for latent tuberculosis infection (LTBI): 4 months of daily Rifampin (4R), 3 months of weekly Isoniazid and Rifapentine (3HP), or 3 months of daily Isoniazid and Rifampin (3HR) that are encouraged in lieu of the standard 9 months of Isoniazid therapy for LTBI.

Objective: We aimed to identify trends in the treatment approach to pediatric LTBI at the UVA Health system.

Methods: Patients who were undergoing evaluation for TB at UVA Health from January 2010 to August 2020 and <18 years of age were retrospectively identified using laboratory, medication, and diagnosis codes through TriNet-x. Systematic chart reviews were performed using Epic to record demographics and clinically relevant data. This subset includes only those who were treated for LTBI. Simple frequencies were measured and correlations were made between treatment regimen and year.

Results: There were 209 people treated for LTBI, who received a total of 214 treatment regimens. The mean age at time of treatment was 9.7±4.9 years, and gender was roughly equal. Risk factors for TB exposure included: foreign country of birth, recent immigration, recent travel to endemic area, concurrent respiratory syndrome, and concurrent immunologic syndrome. None of these clinical variables showed significant correlations with a specific treatment option. From 2010-2020, treatments identified at UVA included 9H (67.8%), short course regimens of 4R or 3HP (18.7%), and other or unidentified treatment (13.6%). Analysis of each year individually revealed an upward trend in prescription of short course regimens (prescribed for 0% of LTBI cases in 2010 and 80% of LTBI cases in 2019).

Conclusions: Analysis of therapy courses chosen revealed that the use of short course regimens (4R or 3HP) is increasing while the use of 9 months of Isoniazid (9H) is decreasing. This coincides with the CDC's updated guidelines on the treatment of LTBI, officially recommending 4R, 3HP, or 3HR over 9H therapy. This is likely to improve patient compliance with the medication course and help move towards the global goal of TB eradication.

Presentation #31
The Impact of Physician Self-Disclosure of Sexual Identity on Patient Trust

Joseph Michel

Background: Annual polls suggest that upwards of 30% of Americans would feel somewhat or very uncomfortable to find out that their physician is part of the LGBTQ+ community. There has been little to no randomized research into the impact of physician self-disclosure of their sexual identity.

Methods: This randomized trial utilized an experimental, vignette-based study design. Participants were recruited to take an anonymous online survey through social media platforms, using both organic shares and paid advertisements. The survey included three sections. The
first was common to all participants, using a previously validated survey tool to measure baseline trust in medical professionals. The second section involved a set of two experimental vignettes followed by a series of questions to gauge the participant’s trust in the physician in the vignette. These questions were coded and scored with a higher total indicating more trust. The manipulated variable between the vignettes was the disclosure of the sexuality of the physician within the context of sharing the experience of the physician’s spouse to reassure and relate to the patient. Participants were randomized to 4 different groups: male-heterosexual physician, female-heterosexual physician, male-homosexual physician, and female-homosexual physician. The primary endpoint was comparing the difference in trust scores between vignettes 1 and 2 between randomization groups.

**Results:** A total of 191 individuals took the Physicians Actions Changing Trust (PACT) Survey with 181 randomized after meeting eligibility criteria. Significant demographics included a skew toward suburban respondents (58.6%) and college educated respondents (70.2%). The mean difference between Vignette 1 and Vignette 2 across the 4 randomization groups was 0.517. The only randomization group to trend towards a significant difference was the male-homosexual physician group with a Difference in Means=1.51 with p=0.111.

**Conclusions:** On first look, these results suggest that disclosure of sexual identity does not significantly impact patient trust in a physician. The PACT survey is limited by a small and non-representative sample size. A larger and more diverse sample population may reveal significant differences in trust of physicians that disclose a non-heterosexual relationship.

**Presentation #32**
**Federal Funding for Viral Threat Preparedness**

Abigail Norwood and A’isha Sharif

The COVID-19 pandemic has laid bare the vast gaps in the nation’s ability to respond to emerging viral threats (EVT). To better understand the current state of affairs and areas of improvement, we analyzed the annual budgets of the Department of Health and Human Services (HHS), the Centers for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH) from 2000 to 2020. Total health spending and agency budgets for HHS, CDC, and NIH increased year-to-year over the 20-year period. However, the increases in spending were not equivalent among the three agencies, nor were they proportional to increases in spending in other sectors of the federal government. Because pandemic preparedness was initially categorized as a national security/defense line item, we also compared HHS, CDC, and NIH budgets to the total amount allocated in national defense budgets as well as the total amount spent on healthcare. In both these analyses (Total Health and Total Defense), CDC and NIH only had minimal single digit increases in budgetary appropriations compared to the total year-over-year increases for health and defense, whereas HHS’ budget increased by 191% and 169% compared for every 1-unit of national health and defense spending, respectively. By instituting consistent and proportional viral threat preparedness funding, the U.S. may be better positioned to address future pandemics.

**Presentation #33**
**Intramedullary Nailing of Extra-articular Distal Tibia Fractures: Biomechanical Evaluation of Stability Immediately After Fixation**

Hans Prakash
Aims: The purpose of this study is to determine the immediate post-fixation stability of a distal tibia fracture fixed with an intramedullary nail using a biomechanical model. This is being used as a surrogate for immediate weight bearing post-operatively. The goal is to help inform post-operative protocols.

Material and Methods: A biomechanical model of distal metaphyseal tibia fractures was created using a fourth-generation composite bone model. Three fracture patterns were tested: spiral, oblique, and comminuted. Each of the fractures extended to within 4.5cm of the plafond. The models were near-anatomically reduced and stabilized with an intramedullary nail and three distal locking bolts. Cyclic loading was performed to simulate the normal gait cycle. Loading was completed in compression at 3000N at 1 Hz for a total of 70,000 cycles. Displacement (shortening, coronal angulation, sagittal angulation) was measured at regular intervals.

Results: The spiral and oblique fracture patterns were able to withstand simulated weight bearing with minimal displacement. The comminuted model had early implant failure with breaking of the distal locking bolts. The spiral fracture model shortened an average of 0.27mm, developed an average coronal angulation of 2 degrees, and an average sagittal angulation of 1.22 degrees. The oblique fracture model shortened an average of 0.18mm, developed an average coronal angulation of 2.36 degrees, and an average sagittal angulation of 2.56 degrees. Most of the displacement occurred in the first 2,500 cycles, and the rate of displacement decreased over time.

Conclusions: For spiral and oblique fracture patterns, simulated weight bearing resulted in a clinically acceptable degree of displacement. Most of the displacement occurred early in the test period, and the rate of displacement decreased over time. Based on this model, early weight bearing appears safe for well reduced oblique and spiral fractures, but not in comminuted patterns that have poor bone contact.

Presentation #34
Incidence, risk factors and management of venous thromboembolisms in patients with primary CNS lymphoma

Miyabi Saito

Background: Venous thromboembolism (VTE) is a known complication of malignancy. While brain tumors in general predispose to VTE, incidence in primary central nervous system lymphoma (PCNSL) is poorly characterized.

Objective: To determine incidence, risk factors, management and outcome of VTE in PCNSL patients

Method: Retrospective study of 78 PCNSL patients from 2/1/2002 to 4/1/2020 at the University of Virginia evaluating potential risk factors for development of VTE as well as management and outcome.

Results: 24 (31%) of 78 patients developed VTE. Among those, 10 (41.7%) had deep venous thrombosis (DVT) alone, 9 (37.5%) isolated pulmonary embolism (PE) and 5 (20.8%) with both. Median time from PCNSL diagnosis to VTE development was 2 months; 20 of 24 events occurred within the first 6 months. In a univariate competing risks analysis, previous VTE (p < 0.001), impaired ambulation (p = 0.035), baseline hemoglobin < 10 g/dL (p = 0.025) and previous history of diabetes mellitus (p = 0.007) were associated with increased VTE risk. Twenty-three of the 24 patients were anticoagulated acutely with heparin (34.8%) or LMWH (65.2%) and 21 of the 24 chronically with warfarin (28.5%), LMWH (33.3%) or DOAC (38.2%). Median anticoagulant duration was 6.1 months. One adverse event was attributable to anticoagulation (arm hematoma with hemoglobin decrease). Five patients received IVC filters.
with concomitant oral anticoagulation; one experienced IVC thrombosis after anticoagulation discontinuation. Six of the 24 patients experienced recurrent VTE, four while anticoagulated.

**Conclusion:** Patients with PCNSL are at high risk of VTE (approximately 30%); most of the risk accrues in the first few months post diagnosis. Patients with past history of VTE, diabetes mellitus, impaired ambulatory status or hemoglobin <10 mg/dL may be at higher risk for this complication. While optimal management is uncertain, there were no concerning safety signals with anticoagulation in our population.

**Presentation #35**  
**Developmental Outcomes in High Risk Infants**  
Michaela Schreyer

“Cerebral palsy (CP) is a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain”  
1. The Hammersmith Infant Neurological Examination (HINE) has emerged as a useful tool, combined with other assessments, to help with the diagnosis of cerebral palsy in infants and young children. The aim of this study was to collect demographic data, quantitative motor assessment scores, and ultimate developmental diagnoses of infants cared for in the UVA NICU follow-up clinic. A relationship was found between the region of residence of an infant and their score on the HINE, indicating need for social determinants of health screening for infants in these high-risk areas.

**Presentation #36**  
**Reversible cerebral vasoconstriction syndrome after heart transplantation: a case report**  
Leah Shabo

Reversible cerebral vasoconstriction syndrome (RCVS), sometimes referred to as Call-Fleming syndrome, is a neurological disorder characterized by severe, recurrent, thunderclap headaches, with or without other neurological deficits, and segmentation of cerebral arteries. RCVS is a rare condition, and though many occur spontaneously, a little over 50% are accounted for by other conditions such as vasoactive medications or illicit drugs and the postpartum state. There have been a couple of case reports of reversible cerebral vasoconstriction syndrome (RCVS) after heart transplantation. Although, the likelihood of RCVS happening after heart transplantation is rare, it can lead to serious complications like stroke, and cerebral hemorrhages. A 6-year-old male with anthracycline-associated dilated cardiomyopathy underwent heart transplantation for which he was started on: tacrolimus, mycophenolate mofetil, methylprednisolone, and anti-thymocyte globulin x5 doses. The patient complained of a severe headache 15 days after transplantation that was not relieved by standard medication. Two days later, the patient had an unbearable headache and was unable to move the right upper extremity and right-sided facial droop. Initial computed tomography (CT) showed hemorrhages, and CT with angiography showed diffused vasospasm in the cerebral arteries. Tacrolimus induced RCVS was highly suspected, and tacrolimus was subsequently discontinued with sirolimus added as an alternative immunosuppressant. Follow-up imaging showed complete remission of RCVS, with no neurological deficits outside of the mild right-sided weakness in arm and leg due to the patient’s stroke. Our case shows that prompt diagnosis for RCVS in patients who recently underwent heart transplantation is essential in avoiding long-term sequelae.
Presentation #37
Incidence of Atrial Functional Mitral Regurgitation and efficacy of MitraClip intervention: a retrospective single-center study

Dalar Shirinian

Atrial functional mitral regurgitation (AFMR) has emerged only in recent years as a distinct type of functional mitral regurgitation (MR) in patients with long-standing atrial fibrillation (AF). This has led to widely under-reported incidence rates and no reported data on the outcome of transcatheter leaflet repair devices such as MitraClip for such patients. The increasing prominence of the MitraClip as first-line treatment for degenerative MR and functional MR refractory to medical therapy has been well established following FDA approval a decade ago, but these reports on MitraClip procedure outcome have not made a distinction between functional MR in the setting of left ventricular dysfunction vs chronic AF. To this end we retrospectively studied seven patients with chronic AF and preserved left ventricular function who underwent MitraClip repair at the UVA Medical Center from 2009-2019 and measured outcomes immediately following procedure, at 30-day follow-up, and six-month follow-up. Results revealed that AFMR accounts for 3.7% of the cases of MitraClip repair at UVA Medical Center in the last decade. Preoperative measures revealed a predominantly elderly (mean age 83.6) and female cohort (71.4%) with notable comorbidities such as chronic heart failure and kidney disease in all and hypertension (6/7, 85.7%). The procedure required an average of 1.7 clips per patient and was successful for all but one patient who suffered a major bleed and required surgical intervention. No in-hospitalization deaths occurred and average length of stay was four days. There were significant improvements in MR severity immediately following the procedure ($p = 0.006$), significantly improved NYHA functional class at 30-day follow-up ($p < 0.01$), and markedly lowered peak atrial systolic pressure (PASP) measures at 30-day follow-up ($p = 0.7$). These improvements did not retain statistical significance at 6-month follow-up. Nevertheless, our results suggest that MitraClip repair in patients with AFMR leads to initial reduction in MR severity and heart failure related symptoms, and as such should be considered for patients with moderate to severe AFMR

Presentation #38
Increased Risk of Transmission of Contagious Dermatologic Disease During Times of Quarantine

Julian Stashower

To mitigate the spread of COVID-19, many countries have instituted community quarantine or stay-at-home orders (QSAHO) [1]. Paradoxically, while QSAHO may be effective at reducing the risk of COVID-19 infection, they may increase the transmission of contagious dermatologic diseases within a household. Over the past few months, we have observed what we believe to be an increased propensity for transmission of cutaneous diseases within households. We hypothesize that this is due to QSAHO and increased sharing of the same living space.

The confinement of multiple individuals to the same living space likely facilitates the spread of dermatologic diseases. During times of QSAHO, movement within the home is significantly greater than during non-QSAHO periods. This was demonstrated by an elegant study conducted in a retirement community during an 18-day quarantine for a norovirus outbreak, which showed a mean increase of 12 room-to-room transitions per day per resident [2]. As such
behavior increases the number of surfaces contacted and the sharing of mutual spaces, it should be expected to amplify the risk of transmission of contagious dermatologic diseases within a household. Additionally, the increase in time spent in proximity to other household members during QSAHO may lead to increased physical contact and sharing of personal items.

Due to the possibility that QSAHO may increase the likelihood of spread of infection, we advocate for consideration of a lower threshold to treat and examine close contacts of patients with contagious dermatologic diseases, such as scabies, MRSA, and tinea during times of QSAHO. Telemedicine may be useful toward this end. Additionally, we maintain that it is increasingly important that patients be carefully educated about preventive behaviors and encouraged to sanitize potential fomites when indicated.

Presentation #39
Predictors of Physician Reviews

Sarah Swinehart

Background: The consumer review platform, Yelp, is used by patients to rate and review physicians and healthcare encounters. Prospective patients can utilize these reviews when determining whether or not to establish care with a physician. We aimed to analyze if physician or practice demographics influence patient ratings.

Methods: Researchers collected data from 2494 reviews of plastic surgery practices in 24 different cities. Researchers only utilized the most recent 30 reviews from practices that had a minimum of five reviews. Reviews were analyzed for factors including physician gender, physician race, distance of practice from the closest large city, type of practice, and average income of the practice location. Reviews were coded based on Yelp’s rating system that allows consumers to rate practices on a scale of 1-5. Chi-square and ANOVA compared physician and practice factors with ratings.

Results: No significant association was found between physician gender and rating (p=.401) or between type of practice (academic or private) and rating (p=.254). Race was significantly associated with rating (p=.018), with patients of non-Caucasian physicians reporting higher ratings than patients of Caucasian physicians. Average income was significantly associated with ratings (p=.006), with patients in lower income areas reporting lower ratings. Miles to the closest large city was significantly associated with rating (p=.004), with patients at practices closer to the city reporting higher ratings.

Conclusion: Physician ratings on the Yelp review site may be influenced by factors that cannot be controlled by the physician or their practice. Physicians should be aware that such factors exist when they are interpreting reviews for the purpose of improving care and patient satisfaction. Future patients should also consider such factors when choosing a physician using review platforms.

Presentation #40
Case Series and Review of Long-term Non-progression in Metastatic Breast Cancer

Alexander Sytov

Metastatic breast cancer (MBC) was traditionally thought of as a homogeneously aggressive and incurable entity, but there is growing evidence that the broad grouping of MBC harbors wide ranges of tumor molecular/immune subtypes and tumor aggressiveness. Thus, MBC is not
uniformly nor rapidly fatal in all affected patients. The most notable subset of patients is the group who achieves long-term disease control, or undetectable disease, and who have a prolonged survival with little disability from their disease or treatment. Though the term is controversial, some patients with long-term non-detectable disease may effectively be considered “cured”. To best advise treatment options in these patients, it is imperative to identify who is most likely to benefit from aggressive treatment. In this review, we delineate the clinical, pathologic, and disease characteristics associated with non-progression in MBC. We include a single institution case series of long-term non-progressive MBC patients and their characteristics as an example of the frequency of this sub-population of MBC. Future prospective trials are warranted to precisely examine the utility of clinical characteristics as predictors of long-term survival in MBC.

Presentation #41
The “Weight” of BMI on NexGen Sequencing Panel in AML patients

Wang, John

Introduction: Cytogenetics and next generation sequencing (NGS) have become standard of care for initial diagnosis for patients (pts) with acute myeloid leukemia (AML). Obesity rates in the United States continue to rise and the relationship of obesity to outcomes and NGS results in AML is not well defined. This study analyzed if body mass index (BMI) at diagnosis was correlated with the number or type of myeloid mutations seen on initial NGS and whether obesity influenced outcomes stratified by individual mutations.

Methods: Adult pts newly diagnosed with AML at the University of Virginia from 3/2015 to 4/2020 who had cytogenetics and NGS panel completed prior to initiation to therapy were included. The primary aim of this analysis was to test the association of BMI with the number and type of mutations on NGS panel at diagnosis. A logistic regression model was used to explore the relationship between 9 mutations of interest including NPM1, FLT3, TP53, RUNX1, ASXL1, IDH1, IDH2, TET2, and DNMT3A.

Results: 176 AML pts met inclusion criteria with a median age of 66 (range 18-95) and 60.2% (n=106) were male. The median weight was 83.6 kg and median BMI at diagnosis was 28 kg/m² (range 18.1-52.4). There were 54 pts in the normal or underweight category (30.7%), 59 pts in the overweight category (33.5%), 63 pts in the obese class (35.8%). The majority of pts received induction with anthracycline and cytarabine (66.5%, n=117), 21% patients received a hypomethylating agent (HMA) (n=37), and 12.5% of patients received palliative care or low intensity treatment (n=22). There was no difference in the median number of mutations across BMI groups with a spearman correlation of −0.1 (p value 0.2) with a median number of 2 mutations across all weight groups. Patients in underweight or normal weight groups were more likely to have a TP53 mutation than patients in higher weight classes HR 3.5 (95% CI 1.7-7.3; p = 0.04). BMI did not predict presence of the other 8 mutations. TP53 mutation status was associated with decreased RFS and OS as expected, specifically there was no protective effect of BMI on TP53. However, obese and overweight TP53 negative patients trended better with improved RFS and OS compared to the lower weight classes. When risk stratified for BMI alone, patients with higher BMIs had an improved trend in RFS and OS.

Conclusion: BMI in pts with newly diagnosed AML does not appear to predict for the gross number of NGS mutations. However, TP53 mutations occurred more often in patients with low or normal BMI compared to overweight patients. Obese and overweight patients trended with improved RFS and OS compared to the lower weight classes.
Presentation #42
Pacemaker Incidence and Dependence after Transcatheter Aortic Valve Replacement

L. Brett Whalen

Objective: Transcatheter Aortic Valve Replacement (TAVR) is quickly surpassing open surgery in the treatment of severe aortic stenosis. However, recent studies have suggested a comparatively high rate of heart block among TAVR patients resulting in permanent pacemaker implantation (PPMI). This study sought to identify risk factors for new PPMI after TAVR, and determine rate of PPM dependence at follow-up.

Methods: All patients with no prior PPMI undergoing TAVR at a single institution between January 2016 and June 2019 were retrospectively reviewed. Univariate analysis, stratified by PPMI status, evaluated demographics, EKG characteristics, valve sizing, valve type, and length of stay (LOS) between groups. In patients who required PPMI, device dependence was recorded at follow-up. Multivariate logistic regression was fit to identify independent predictors of PPMI after TAVR.

Results: Of 290 consecutive patients undergoing TAVR, 47 (16.2%) required new PPMI postoperatively. Univariate analysis revealed previous conduction abnormalities (p=0.001), specifically right bundle branch block (p= <0.0001), were strongly associated with PPMI. Valve type also correlated with pacemaker need on univariate analysis (Evolut Pro 29% vs Evolut R 16% vs Sapien 3 13%, p= .0395). Previous AVR did not predict PPMI. After risk adjustment with multivariate logistic regression, conduction abnormality, age and hypertension were found to be independently predictive of PPMI (Table). Valve type disappeared as a risk factor for PPMI once controlled for by multivariate regression. The median length of stay of patients who received a pacemaker was significantly higher than those who did not (4 vs 3 days, p= 0.003). The majority of patients who underwent pacemaker placement (83%) were found to be dependent on their devices at interrogations performed a median of 36 days after PPMI.

Conclusion: In the present study, prior conduction abnormalities, older age and hypertension were independently predictive of PPMI after TAVR. Additionally, patients who underwent PPMI had longer hospital stays and remained dependent on their pacemakers at follow-up.

Understanding the patient’s personal risk profile for PPMI is important and may inform approach among the highest risk patients. Furthermore, high pacemaker dependence after PPMI supports the practice of early permanent pacemaker intervention over temporary pacing.

Presentation #43
Developmental Concerns in Children Coming to the United States as Refugees

Christie Zheng

Background: Children account for around 50% of refugees worldwide. These children often face many childhood adversities including malnutrition, infection, and displacement. When families resettle in the United States, existing medical conditions, language and cultural barriers, and psychological stressors prior to resettlement also add to the complexity of caring for these children. Therefore, it is important to understand the medical care and the social support these children need. The International Child Development Clinic (ICDC) at UVA specializes in providing care for children with developmental concerns, learning disabilities, or behavioral challenges, who have come as refugees, immigrants, or international adoptees. Clinical experiences from the ICDC may shine light upon ways to care for this special patient population.

Objective: To describe the population of refugee children seen at the ICDC and to characterize the diagnoses and treatments they received.
Methods: The first 100 refugee children seen at the ICDC from 2012 – 2019 were included in this study. Data were collected by retrospective chart review and includes demographic information, reasons for referral to the ICDC, chief complaints, diagnostic and medical management, and referrals to other specialties and services.

Results: The children were 7.9 years old on average when first seen. They came from more than 14 countries and spoke more than 18 languages. They spent an average of 4.5 years in transit and 38% had lived in a refugee camp (average 6.9 years). Common existing conditions include chronic infection (20%) and anemia (16%). Language and motor delay are the most prevalent developmental diagnoses (64% and 60% respectively). Of the children with motor delay, 21 had previous diagnoses of cerebral palsy (CP). However, only 8/21 were diagnosed with CP upon further evaluation. Alternate diagnoses included genetic syndromes, congenital abnormalities, congenital rubella syndrome, and intramedullary conus tumor. For management, referrals to other specialties, therapies, and education support are frequently made.

Conclusions: Children seen at the ICDC came from diverse backgrounds and often had pre-existing medical conditions. Overseas medical records or diagnoses can be inaccurate or incomplete and should be evaluated further. Having a multidisciplinary team with different medical specialties, therapists, translators, social workers, and educational support is crucial to provide well-rounded care for these children.