force capabilities of the device and defining force requirements. DISCUSSION/SIGNIFICANCE OF IMPACT: Upon further development and testing, this device can be implemented into endovascular neurosurgery to improve occlusion rates of intracranial aneurysms and reduce patient risk during these operations. CONFLICT OF INTEREST DESCRIPTION: I am pursuing intellectual property on this invention. I was careful not to describe the invention in too much detail in my abstract submission for this reason. This research is my thesis work, and I placed on one year embargo on it before it is published to give us time to sort out IP. I would like to be considered for inclusion in Translational Science 2020 if I am able to get IP on this work before publishing, which I expect will be the case. I have every intention of obtaining IP before the conference in April 2020.

4524

Fighting Malaria, One Image at a Time: Using Computer Vision to Develop an Automated Vector Speciation Tool

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OBJECTIVES/GOALS: Rapid and accurate identification of primary malaria vector species from collected specimens is the most critical aspect of effective vector surveillance and control. This interdisciplinary team of engineers aims to automate identification using a deep learning computer vision algorithm. METHODS/STUDY POPULATION: The team spent August of 2019 observing and participating in control and surveillance activities in Zambia and Uganda. They conducted >65 interviews with key stakeholders across 9 malaria control and surveillance sites, ranging from field and community health workers, to malaria researchers and Ministry of Health employees. Stakeholder feedback validated the need for a more accurate and efficient method of vector identification in order to more effectively deploy targeted malaria interventions. The team set forth in designing and prototyping a portable, automated field tool that could speciate mosquito vectors to the complex level using artificial intelligence. RESULTS/ANTICIPATED RESULTS: The team's research demonstrated that accuracy, cost effectiveness, and ease of use would be critical to the successful adoption of the tool. Results of initial prototyping, usability studies, and stakeholder surveys were used to determine the tool's minimal user specifications: 1) the ability to distinguish between *Anopheles Gambiae* and *Anopheles Funestus*, the two principal malaria vectors in the countries visited, 2) achieving an identification accuracy of ≥90% to the complex level, and 3) accessibility to the speciation data 3-7 days following vector collection. Next steps include optimizing the tool to deploy a minimal viable product for testing in Kenya by the summer of 2020. DISCUSSION/SIGNIFICANCE OF IMPACT: The accurate, high-quality surveillance enabled by this device would allow malaria control programs to scale surveillance to remote regions where an entomologist may not be available, allowing malaria programs to deploy effective interventions, monitor results, and prevent disease.

4294

Patient Matching Errors and Associated Safety Events

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OBJECTIVES/GOALS: Errors in patient matching could result in serious adverse safety events. Unlike publicized mix-ups by healthcare providers these errors are insidious and with increased data sharing, this is a growing concern in healthcare. The following project will examine patient matching errors and quantify their association with safety. METHODS/STUDY POPULATION: EHR systems perform matching out-of-the-box with unknown quality. Using matching processes outside the EMR, the rate at which matching errors are present was quantified and the erroneous records were flagged providing both comparative measures and data necessary to evaluate patient safety. To understand the relationship between matching and safety we will establish a percent of voluntarily reported safety events in our institution where a matching error existed during an encounter. Any safety events occurring for a flagged patient will be reviewed to determine if matching errors contributed to the safety problem. Not all safety events are reported so we will perform full chart review of a filtered list of medical records that have a higher likelihood of safety events. RESULTS/ANTICIPATED RESULTS: We were able to quantify matching errors, and the preliminary matching error rate is approximately 1%, representing over 700 patients. The work is in progress and we are beginning to determine the association between safety events and incorrect matching. Together these results will provide an incentive to identify errors, make corrections, and develop methods to achieve these objectives. The number of matching errors impacts patient care as well as business operations and is likely to have a negative financial impact on institutions with high error rates regardless of its relationship to safety. DISCUSSION/SIGNIFICANCE OF IMPACT: Patient matching is bundled with EHR software and institutions have little control over error rates, yet bear the liability for resulting clinical error. Institutions need to be able to identify undetected matching errors and any associated safety events and this project will provide that solution.

4324

Phase 1 Sterile Product Formulation and Manufacturing at Academic Medical Centers: An Introduction for Translational Researchers

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OBJECTIVES/GOALS: To facilitate the development of innovative injection products by providing translational researchers with a regulatory and manufacturing road map for producing small batch sterile products for Phase 1 research use. To leverage recent AMC investments in facility improvements and pharmacy training in the areas of sterile product production, testing, and environmental controls, that can be used to support production of phase 1 clinical trial supplies METHODS/STUDY POPULATION: Searching and organizing relevant data and information from web portals and databases in the following: areas: FDA, EMA, USP regulations, regulatory

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science, pharmaceutical formulation and analytics, supply vendors, analytical testing laboratories, and product testing laboratories. Present the information using a user friendly format including flow charts and development timelines, taking the perspective of the translational investigator. RESULTS/ANTICIPATED RESULTS:

- Choosing AMC resources vs outside consultants and vendors, leveraging local resources where possible
- Qualifying and monitoring suppliers, testing laboratories, in-house departments, and Contract Drug Manufacturing Organizations (CDMO)
- Bringing together the deliverables for the IND CMC section
- Where and how to leverage available products and science to simplify safe and reliable production

DISCUSSION/SIGNIFICANCE OF IMPACT: Use and utility of injectable drug products, both small molecule and biologics, is growing rapidly, and is projected to continue to escalate well into the next decade. This is due not only to advances in medicine, but also to improvements in AMC-based sterile product production, and a better understanding of small batch manufacturing methods. All three trends align in academic medical centers (AMC) and can be utilized by translational researchers, if they can understand the potential and regulatory requirements.

4328

Translational Fellows as a mechanism to improve throughput of university technology commercialization

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OBJECTIVES/GOALS: The development of early university technologies for commercialization is largely inefficient and exhibits a high rate of failure, often due to a lack of researcher time and commercialization experience. We have created the Translational Fellow role to address these needs and increase the throughput of university technology transfer. METHODS/STUDY POPULATION: Translational Fellows will first build their initial competencies to identify, evaluate, and develop new technologies through internships with intake organizations within the university ecosystem, including the Office of Technology Management, the LEAP gap-funding mechanism, and local venture capital firms. Following this training, Fellows will provide tailored support to validated projects by establishing development milestones, liaising with industry experts, navigating regulatory requirements, and drafting marketing materials such as executive summaries and financial projections. Lastly, Fellows will partner with a highly developed project to facilitate the commercialization of the technology, whether through a SBIR/STTR grant, direct licensing event, or startup creation. RESULTS/ANTICIPATED RESULTS: We anticipate that implementation of this mechanism will increase the proportion of university-generated inventions that undergo successful commercialization events, as well as increase the rate at which these projects develop after initial validation. Furthermore, we expect that the skills acquired through this program will allow Fellows to successfully transition to a variety of roles in the biotech space. We also expect that Fellows will be capable of training other scientific teams in the preparation of SBIR/STTR grants, further expanding opportunities for commercialization in the research space. DISCUSSION/SIGNIFICANCE OF IMPACT: Translational Fellows fill a unique interdisciplinary niche, allowing them to address common barriers faced by academic inventors. Improving commercialization throughput further capitalizes on the wealth of ideas generated in universities, thereby driving innovation in the biomedical space and directly contributing to improved human health. CONFLICT OF INTEREST DESCRIPTION: The authors have no conflicts of interest.

Data Science/Biostatistics/Informatics

4391

Big data analysis of adolescent obesity, pregnancy and kidney function

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OBJECTIVES/GOALS:

1. Examine the associations among BMI and markers of cardiometabolic risk, including blood pressure, lipids and blood glucose.
2. Assess prevalence of kidney function deterioration, identified as hyperfiltration and moderately increased albuminuria (MIA), in obese compared to normal weight adolescents.

METHODS/STUDY POPULATION: De-identified electronic health records (EHR) data were extracted for female adolescents, aged 12-21 years, and their offspring through 24 months, who received health care services (Jan 2012 to Dec 2016) in NYC from 12 academic health centers and community health centers that are part of PCORnet NYC Clinical Data Research Network (NYC-CDRN). Data were analyzed using SAS (version 3.2.5). Patient characteristics overall and for study subgroups were examined using standard summary statistics. Trends in cardio-renal variables were examined by BMI groups coded according to NHANES as underweight, normal weight, overweight or obese. Multiple linear regression analyses will control for covariates. RESULTS/ANTICIPATED RESULTS: Data from 651,066 adolescent females ages 12-21 were retrieved. Analysis was performed on a subset of 202,214 unique patients (26% white, 15% black, 12.9% Latina) for whom there was complete data for BMI and blood pressure. Distribution of BMI was 6% underweight, 59% normal weight, 19% overweight, and 17% obese. There were significant differences in mean systolic (SBP, mean±SD mmHg: 102±12, 108±11, 112±12, 116±12) and diastolic blood pressure (DBP, mean±SD mmHg: 62±10, 66±8, 68±8.9, 70±9) across the four BMI groups with an increasing trend (p-values<0.0001). We will examine renal function trends, and whether these cardio-renal differences persist when controlling for age, race and ethnicity. DISCUSSION/SIGNIFICANCE OF IMPACT: Although SBP/DBP means were within normal limits across BMI groups, significant increasing trends suggest that women in higher BMI groups may be at increased risk for hypertension and potentially for renal dysfunction. We will examine contributions of race/ ethnicity and age to these associations.

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